
Chapter Two

# Forecasts

Projections of future aviation demand will have an impact on the future needs of the airport. The most recent aviation demand forecasts were completed in association with the master plan which was adopted by the Redding City Council in 2015. The forecasts associated with the previous master plan had a base calendar year of 2013. Since that time, the COVID-19 pandemic has had a significant impact on the aviation industry and on commercial passenger service, specifically. In response, many airlines made significant changes to their flight schedules. As of this writing (June 2023), passenger activity appears to be returning to pre-pandemic levels, and some airports, including RDD, have experienced exceptional growth in passenger activity. This chapter will present new aviation demand forecasts for Redding Regional Airport that take into consideration the numerous changes to the aviation industry since 2015.

The Federal Aviation Administration (FAA) has oversight responsibility to review and approve aviation forecasts developed in conjunction with airport planning studies. In addition, aviation activity forecasts may be an important input to future analyses associated with planned airport development.

The FAA will review individual airport forecasts with the objective of comparing them to its *Terminal Area Forecasts* (TAF) and the *National Plan of Integrated Airport Systems* (NPIAS). Even though the TAF is updated annually, in the past there was almost always a disparity between the TAF and local airport planning forecasts. This is primarily because the TAF forecasts are the result of a top-down model that does not consider local conditions. While the TAF forecasts are to be a point of comparison for these forecasts, they serve other purposes such as asset allocation by the FAA.

The FAA Western-Pacific Region – Airport District Office is responsible for forecast approval. When reviewing a sponsor's forecast, FAA must ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. As stated in FAA Order 5090.5, *Formulation of the National Plan of Integrated Airport Systems (NPIAS)* and *Airports Capital Improvement Plan (ACIP)*, forecasts should be:

- Realistic;
- Based on the latest available data;
- Reflective of current conditions at the airport (as a baseline);
- Supported by information in the study; and
- Able to provide adequate justification for airport planning and development.

Ultimately the forecasts of total passenger enplanements (passenger boardings), total operations, and based aircraft must be compared to the TAF for consistency. The forecasts are considered consistent with the TAF if they meet the following criteria:

- Forecasts differ by less than 10 percent in the 5-year forecast period, and 15 percent in the 10-year forecast period, or
- Forecasts do not affect the timing or scale of an airport project, or
- Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.5, *Formulation of the National Plan of Integrated Airport Systems (NPIAS)* and *Airports Capital Improvement Plan (ACIP)*.

If the master plan forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision making. This may involve revisions to the forecasts submitted, adjustment to the TAF, or both.

Aviation activity can be affected by many influences on the local, regional, and national levels, making it virtually impossible to predict year-to-year fluctuations of activity over a 20-year period with any certainty. Therefore, it is important to remember that forecasts are to serve only as guidelines, and planning must remain flexible enough to respond to a range of unforeseen developments.

The following forecast analysis for RDD was produced following these basic guidelines. Existing forecasts are examined and compared against current and historic activity. Historical aviation activity is then examined along with other factors and trends that can affect demand. The intent is to provide an updated set of aviation demand projections for RDD that will permit airport management to make planning adjustments as necessary to maintain a viable, efficient, and cost-effective facility by planning for appropriate capital improvement projects.

These aviation demand forecasts were prepared in June 2023. The base year is the full calendar year for 2022 and projections will be made for a 20-year period, out to 2042.

## SOCIOECONOMIC TRENDS

Local and regional forecasts of key socioeconomic variables, such as population, employment, and income, provide an indication of the potential for growth in aviation activities at an airport. In 2022, the base year for these forecasts, there were an estimated 183,102 residents of Shasta County. This is projected to grow to 198,259 by 2042 for an annual growth rate of 0.40 percent. Employment is projected to grow annually at 0.61 percent, while income growth is projected at a robust 1.42 percent annually through 2024. **Table 2A** summarizes the socioeconomic history and projections for Shasta County, California.

**TABLE 2A | Socioeconomic History and Forecasts for Shasta County**

| | HISTORY | | | FORECAST | | | |
|---|---|---|---|---|---|---|---|
| Socioeconomic Parameter | 2010 | 2022 | CAGR 2010-2022 | 2027 | 2032 | 2042 | CAGR 2022-2042 |
| Population | 177,277 | 183,102 | 0.27% | 187,617 | 191,699 | 198,259 | 0.40% |
| Employment | 84,019 | 93,499 | 0.89% | 97,732 | 100,653 | 105,598 | 0.61% |
| Income (PCPI) | $35,939 | $44,212 | 1.74% | $47,487 | $51,073 | $58,618 | 1.42% |

CAGR: Compound annual growth rate
PCPI: Per capita personal income ($2012)

*Source: Woods & Poole - Complete Economic and Demographic Data Source (CEEDS) 2022*

## NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, general aviation, and FAA workload measures. The forecasts are prepared to the meet budget and planning needs of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition when this chapter was prepared was FAA *Aerospace Forecasts – Fiscal Years 2022-2042*. The FAA primarily uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets. The following discussion is summarized from the FAA Aerospace Forecasts. The following is the Forecast Highlights for 2021-2041 from the FAA:

> "Since its deregulation in 1978, the U.S. commercial air carrier industry has been characterized by boom-to-bust cycles. The volatility that was associated with these cycles was thought by many to be a structural feature of an industry that was capital intensive but cash poor. However, the great recession of 2007-09 marked a fundamental change in the operations and finances of U.S Airlines. Since the end of the recession in 2009, U.S. airlines revamped their business models to minimize losses by lowering operating costs, eliminating unprofitable routes, and grounding older, less fuel-efficient aircraft. To increase operating revenues, carriers initiated new services that customers were willing to purchase and started charging separately for services that were historically bundled in the price of a ticket. The industry experienced an unprecedented period of consolidation with three major mergers in five years. The results of these efforts were impressive: 2019 marked the eleventh consecutive year of profitability for the U.S. airline industry.

"The outbreak of the COVID-19 pandemic in 2020, however, brought a rapid and cataclysmic end to those boom years. Airline activity and profitability tumbled almost overnight and without the financial and competitive strength built up during the boom, airlines would have faced even greater challenges. As it was, they were able to slash capacity and costs, and then, relying on their balance sheets, credit ratings and value inherent in their brands, to raise capital through borrowing and restructuring fleets allowing them to withstand the period of losses into 2021. Although several small regional carriers ceased operations in 2020, no mainline carriers did.

"The business modifications necessitated by the downturn will shape the industry for years to come. Primarily, airlines will be smaller having retired aircraft and encouraged voluntary employee separations. Fleets, however, become younger and more fuel-efficient as retirements targeted the oldest and the least efficient aircraft. As airlines carry high levels of debt, capital spending and investment will be restrained which in turn holds back future growth. And even the unbundling of services took a small step backwards as carriers eliminated change fees for all but Basic Economy tickets.

"In the medium-term, airlines will be focused on trying to foretell the recovery in demand and position themselves to meet it. To date, that demand recovery has been extremely uneven, driven by COVID-19 case counts, vaccinations, governmental restrictions and the degree of pent-up demand experienced by consumers. As expected, domestic leisure traffic has led to the recovery and domestic business travel should begin to pick-up later in 2021. International activity will lag somewhat as individual countries' experience with the pandemic is varying so widely. As a result, airlines have initially shifted flights and routes to outdoor recreation areas but as the recovery progresses, their focus will gradually return to traditional markets and segments.

"Long-term, the strengths and capabilities developed over the past decade will become evident again. There is confidence that U.S. airlines have finally transformed from a capital intensive, highly cyclical industry to an industry that can generate solid returns on capital and sustained profits.

"Fundamentally, over the long-term, aviation demand is driven by economic activity, and a growing U.S. and world economy provides the basis for aviation to grow. The 2021 FAA forecast calls for U.S. carrier domestic passenger growth over the next 20 years to average 4.9 percent per year. This average, however, includes three double-digit growth years during the recovery from a very low base in 2021. Following the recovery period, trend rates resume with average growth through the end of the forecast of 2.3 percent. Domestic passengers are forecast to return, on an annual basis, to 2019 levels in early 2024. Oil prices averaged $43 per barrel in 2020 and are forecast to fall to $36 per barrel in 2021 before rising steadily to $94 by the end of the forecast period.

"System traffic in revenue passenger miles (RPMs) is projected to increase by 5.5 percent a year between 2021 and 2041. Domestic RPMs are forecast to grow 5.1 percent a year while International RPMs are forecast to grow significantly faster at 6.6 percent a year. These figures are, of course, boosted by several years of high growth rates during the recovery after which the annual rates return to more moderate long-term trends. The strong growth rates return system RPM, on an annual basis, to 2019 levels in 2024, with domestic RPM returning early that year but international RPM recovering a year later in 2025. System capacity as measured by available seat miles (ASMs) is forecast to grow somewhat slower than RPM during the recovery period as airlines seek to restore load factors but, subsequently, ASM grows in line with the increases in demand.

"The FAA expects U.S. carrier profitability to remain under pressure for several years due to depressed demand and competitive fare pressures. As carriers return to levels of capacity consistent with their fixed costs, shed excess debt, and see rising yields, profitability should gradually return. Over the long term, we see a competitive and profitable aviation industry characterized by increasing demand for air travel and airfares growing more slowly than overall inflation, reflecting growing U.S. and global economies.

"The general aviation (GA) sector was less affected by the COVID-19 crisis than the airlines. There are newcomers in the high-end business jet segment as a result of flying privately due to concerns of the virus. At the lower end newcomers included student, private and commercial pilots, joining the existing GA pilot population. They are flying piston aircraft in and out of small airports as well as larger airports that do not have as many commercial flights due to the pandemic. The long-term outlook for general aviation thus is more promising than before, as growth at the high-end offsets continuing retirements at the traditional low end of the sector.

"The active GA fleet is forecast to increase slightly by 0.1 percent between 2021 and 2041, after recording a decline of 2.8 percent in 2020 from the year before (active fleet shrinks one percent by 2041 from its 2019 level). Turbine aircraft, including rotorcraft, are estimated to not experience a decline between 2019 and 2020, while the total of piston fleet is estimated to have decreased by 1.1 percent in 2020 from the previous year. While steady growth in both GDP and corporate profits results in continued growth of the turbine and rotorcraft fleets, the largest segment of the fleet – fixed wing piston aircraft will continue to shrink over the forecast period. Against the marginally declining active GA fleet between 2019 and 2041, the number of GA hours flown is projected to increase by a total of 14.8 per-cent from 2019 to 2041 (an average of 0.6 percent per year), as growth in turbine, rotorcraft, and experimental hours more than offset a decline in fixed wing piston hours. When the period of 2021 to 2041 is compared, the total hours flown by the GA aircraft fleet is forecast to increase by an average of 1.0 percent per year, after declining by 9.7 percent between 2019 and 2020, and recovering partially, with a growth of 4.9 percent in 2021 from the previous year.

"With the expected robust air travel demand growth between 2022 and 2026 due to the U.S. economy recovering from the impact of COVID, we expect increased activity growth that has the potential to increase controller workload. Operations at FAA and contract towers are forecast to grow 1.9 percent a year over the forecast period (FY2021-41) with commercial activity growing at approximately five times the rate of non-commercial (general aviation and military) activity. The COVID recovery growth in U.S. airline activity is the primary driver. The U.S. commercial aviation sector has been hit by the pandemic much harder than the non-commercial sector. The pent-up demand is expected to drive the commercial operations back to the pre-COVID level, hence leading to the stronger growth in the commercial sector. In particular, large and medium hubs will see much faster increases than small and non-hub airports, largely due to the commercial nature of their operations."

**Table 2B** presents the FAAs national forecasts of aviation activity for demand indicators relevant to activity at RDD. Nationally, passenger enplanements on regional and mainline carriers are forecast to rebound to pre-pandemic levels by 2024 and then to continue to increase throughout the 2020s. Overall, enplanements are projected to increase 3.8 percent from 2022-2042. Operations by commuter/air taxi aircraft are projected to increase modestly over the same periods with an overall increase of 0.5 percent from 2022-2042.

**TABLE 2B | FAA Activity Forecasts**

| Year | US Regional Carriers - Domestic Revenue Enplanements | US Commercial Carriers - Domestic Revenue Enplanements[1] | Air Carrier Operations | Air Taxi/ Commuter Operations | GA Aircraft Fleet | GA Operations |
|---|---|---|---|---|---|---|
| 2010 | 162,000,000 | 635,000,000 | 12,658,000 | 9,410,000 | 223,370 | 26,580,000 |
| 2020 | 94,000,000 | 462,000,000 | 11,737,000 | 5,472,000 | 204,140 | 24,941,000 |
| 2021 | 105,000,000 | 507,000,000 | 12,214,000 | 5,882,000 | 204,405 | 27,200,000 |
| 2022 | 123,000,000 | 645,000,000 | 13,782,000 | 6,285,000 | 204,590 | 28,300,000 |
| **FAA FORECAST** | | | | | | |
| 2027 | 179,000,000 | 914,000,000 | 20,928,000 | 5,963,000 | 204,925 | 30,587,000 |
| 2032 | 200,000,000 | 1,022,000,000 | 23,074,000 | 6,286,000 | 205,195 | 31,053,000 |
| 2042 | 258,000,000 | 1,318,000,000 | 27,081,000 | 6,967,000 | 208,905 | 32,027,000 |
| **Compound Average Annual Growth Rate** | | | | | | |
| 2010-2021 | -3.9% | -2.0% | -0.3% | -4.2% | -0.8% | 0.2% |
| 2021-2022 | 17.1% | 27.2% | 12.8% | 6.9% | 0.1% | 4.0% |
| 2022-2032 | 5.0% | 4.7% | 5.3% | 0.0% | 0.0% | 0.9% |
| 2022-2042 | 3.8% | 3.6% | 3.4% | 0.5% | 0.1% | 0.6% |

[1] Sum of U.S. mainline and regional carriers.

*Source: FAA Aerospace Forecasts - Fiscal Years 2022-2042*

The number of total active aircraft in the general aviation aircraft fleet is projected to grow 0.1 percent annually through 2042. This growth is driven largely by increasing numbers of turboprops (+0.6%), business jets (+2.6 percent), and helicopters (+1.5 percent) while the total number of piston aircraft are forecast to decline by 0.8 percent over the same period.

## UNMANNED AIRCRAFT SYSTEMS (UAS)

UAS are commonly referred to as drones, which have been experiencing healthy growth in the U.S. and around the world the past few years. According to the FAA *Aerospace Forecasts Fiscal Years 2022-2042*:

> "A drone consists of a remotely piloted aircraft and its associated elements – including the control station and the associated communication links – that are required for the safe and efficient operation in the national airspace system (NAS). The introduction of drones in the NAS has opened up numerous possibilities, especially from a commercial perspective. This has also brought challenges including drones' safe and secure integration into the NAS. Despite these challenges, the drone sector holds enormous promise; potential uses range from individuals flying solely for recreational purposes to large companies delivering commercial packages and delivering medical supplies. Public service uses, such as conducting search and rescue support missions following natural disasters, are proving promising as well."

On December 21, 2015, the FAA launched an online registration system for recreational/model small drones. This required all drones weighing more than 0.55 pounds (or 250 grams) and fewer than 55 pounds (or 25 kilograms) to be registered. The registration system captures the number of registered pilots but does not capture individual drone aircraft. Nevertheless, the registration information does provide a basic understanding of the growth in drone activity from which the FAA has made a growth forecast for the next five years.

### Trends in Recreational/Model Aircraft

Through an examination of the drone aircraft registrations and renewals, the FAA estimated that there were as many as 1.58 million small drones in the national fleet. FAA developed three forecasts, which are presented in **Table 2C**. By 2026, FAA is forecasting as many as 1.83 million small drones.

**TABLE 2C | Total Recreational/Model Fleet**

| Fiscal Year | Low* | Base** | High** |
|---|---|---|---|
| 2021 | 607,200 | 1,582,200 | 1,582,200 |
| Forecast | | | |
| 2022 | 650,900 | 1,696,500 | 1,698,100 |
| 2023 | 684,800 | 1,757,600 | 1,764,500 |
| 2024 | 709,600 | 1,796,500 | 1,818,200 |
| 2025 | 726,200 | 1,803,900 | 1,827,200 |
| 2026 | 737,800 | 1,807,500 | 1,836,000 |
| CAGR | 3.97% | 2.70% | 3.02% |

CAGR: Compound annual growth rate
*Effective/Active fleet counts combined with multiplicity of aircraft ownership
**New registration counts combined with multiplicity of aircraft ownership

*Source: FAA Aerospace Forecasts FY 2022-2042*

### Trends in Commercial/Non-Model UAS Aircraft

Online registration for commercial/non-model small drones went into effect on April 1, 2016. These are commercial drones weighing less than 55 pounds. Unlike recreational/model ownership, each aircraft must be registered individually. Registrations of commercial/non-model UAS aircraft have been increasing year-after-year, according to the FAA. **Table 2D** shows the FAA forecast for this category of UAS. It is estimated that there were up to 622,000 commercial/non-model UAS in 2021, which is forecast to increase to 968,000 by 2026.

**TABLE 2D | Total Commercial/Non-Model Fleet**

| Fiscal Year | Low* | Base** | High** |
|---|---|---|---|
| 2021 | 328,000 | 622,000 | 622,000 |
| **Forecast** | | | |
| 2022 | 292,000 | 699,000 | 729,000 |
| 2023 | 301,000 | 757,000 | 809,000 |
| 2024 | 320,000 | 801,000 | 869,000 |
| 2025 | 339,000 | 834,000 | 918,000 |
| 2026 | 355,000 | 858,000 | 968,000 |
| CAGR | 1.59% | 6.64% | 9.25% |

CAGR: Compound annual growth rate
*Effective/Active fleet counts combined with multiplicity of aircraft ownership.
**New registration counts combined with multiplicity of aircraft ownership

*Source: FAA Aerospace Forecasts FY 2022-2042*

### Trends in Large UAS

Drones weighing 55 pounds or more cannot be operated as recreational remote piloted aircraft. They are registered with FAA using the existing aircraft registration system. At present, most large drones are flown by government entities, but commercial operators have steadily increased in 2021 with most new large drone operators active in agricultural spraying operations. The FAA estimates there were 285 large drones operating in the NAS in 2021. By 2026, FAA is forecasting 568 commercial large drones will be operating.

### Advanced Air Mobility (AAM)

The AAM segment has some cross-over with the functions of drone. AAM is defined as "a safe and efficient system for air passenger and cargo transportation, inclusive of small package delivery and other urban drone services, which support a mix of onboard/ground-piloted and increasingly autonomous operations."

AAM technology presents considerable opportunities for economic growth over the coming decades. The FAA forecasts indicate that package delivery is likely to experience economic growth over the next decade. Passenger service, on the other hand, promises larger markets for AAM services, but safety challenges, infrastructure, public acceptance, and evolving technology may slow full integration in the short term. Nevertheless, flight testing continues with numerous commercial companies conducting test flights. An example is the advancements that Joby Aviation has made with its Electric Vertical Takeoff and Landing Aircraft (eVTOL), which is expected to receive FAA certification in 2023 or 2024. Currently, this aircraft can fly over 150 miles on one battery charge and can carry four passengers.

One of the potential challenges of eVTOL entering the marketplace is infrastructure. A system of vertiports for AAM services appears to be the preferred method of operation. Joby Aviation and Archer have partnered with parking garage operator REEF Technology with the goal of using parking garage rooftops as vertiports. Other options may include establishing vertiports at existing airports. For example, there could be an eVTOL air taxi service from RDD to area locations in the future. Future infrastructure planning for the airport should consider establishing a vertiport to take advantage of the emerging AAM market.

## *FORECASTING APPROACH*

The development of aviation forecasts proceeds through both analytical and judgmental processes. A series of mathematical relationships is tested to establish statistical logic and rationale for projected growth. However, the judgment of the forecast analyst, based upon professional experience, knowledge of the aviation industry, and assessment of the local situation, is important in the final determination of the preferred forecast. The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Methodologies frequently considered include trend line/time-series projections, correlation/regression analysis, and market share analysis.

Trend line/time-series projections are probably the simplest and most familiar of the forecasting techniques. By fitting growth curves to historical data, then extending them into the future, a basic trend line projection is produced. A basic assumption of this technique is that outside factors will continue to affect aviation demand in much the same manner as in the past. As broad as this assumption may be, the trend line projection does serve as a reliable benchmark for comparing other projections.

Correlation analysis provides a measure of the direct relationship between two separate sets of historic data. Should there be a reasonable correlation between the data sets, further evaluation using regression analysis may be employed.

Regression analysis measures statistical relationships between dependent and independent variables, yielding a "correlation coefficient." The correlation coefficient (Pearson's "r") measures association between the changes in the dependent variable and the independent variable(s). If the "$r^2$" value (coefficient determination) is greater than 0.95, it indicates good predictive reliability. A value less than 0.95 may be used, but with the understanding that the predictive reliability is lower.

Market share analysis involves a historical review of the airport activity as a percentage, or share, of a larger regional, state, or national aviation market. A historical market share trend is determined, providing an expected market share for the future. These shares are then multiplied by the forecasts of the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections but can provide a useful check on the validity of other forecasting techniques.

Forecasts will age, and the further one is from the base year, the less reliable a forecast may become, particularly due to changing local and national conditions. Nonetheless, the study will include a 20-year forecast of aviation demand. Facility and financial planning usually require at least a ten-year view since it often takes more than five years to complete a major facility development program. However, it is important to use forecasts which do not overestimate revenue-generating capabilities or understate demand for facilities needed to meet public (user) needs.

Future facility requirements, such as airline terminal complex component spaces and general aviation hangars and apron areas, are derived from projections of various aviation demand indicators. Using a broad spectrum of local, regional, and national socioeconomic and aviation information and analyzing the most current aviation trends, forecasts are presented for the following aviation demand indicators:

- Commercial Passenger Service
  - Annual Enplaned Passengers
  - Commercial Operations and Fleet Mix

- Commercial Air Cargo
  - Annual Enplaned Tons

- General Aviation
  - Based Aircraft
  - Based Aircraft Fleet Mix
  - General Aviation Operations
  - Air Taxi and Military Operations

- Peaking Characteristics
  - Airline Enplanement Peaks
  - Operations Peaks

This forecasting effort was completed in June 2023 with a base year of 2022.

## *RECENT COMPARISON FORECASTS*

Part of the process of developing master plan forecasts is to review any aviation demand forecasts that have been developed recently. The following discusses these recent forecasts for the airport.

### FAA TERMINAL AREA FORECAST (TAF)

On an annual basis, the FAA publishes the *Terminal Area Forecast* (TAF) for each airport included in the *National Plan of Integrated Airport Systems* (NPIAS). The TAF is a generalized forecast of airport activity used by FAA for internal planning purposes. It is available to airports and consultants to use as a baseline projection and an important point of comparison while developing local forecasts.

**Table 2E** presents the 2022 TAF for the airport (published in February 2023). The TAF estimates 96,563 passenger enplanements in 2022. The actual enplanement total for 2022 was 100,890. The TAF projects only 104,462 enplanements by 2042. The TAF projects an annual growth rate of 0.39 percent for enplanements.

For operations the TAF projects zero growth in air carrier operations (those with more than 60 seats) but robust growth (1.91 percent) in the utilization of commuter aircraft (those with less than 60 seats). Itinerant general aviation operations are projected to increase by 1.48 percent annually while local general aviation operations are projected to increase by 2.65 percent annually. Total operations are projected to increase by 2.01 percent annually. Based aircraft are projected to grow 1.82 percent annually increasing from 240 to 344 within the next 20 years.

As noted, the TAF was published in February of 2023, and the total impacts of the COVID pandemic were only beginning to emerge at the time. The 2022 TAF is based on a fiscal year and does not fully consider the recent substantial increase in passenger activity at the airport. Nonetheless, the FAA will compare the forecasts developed for this study to the TAF for consistency. Since several of the TAF elements (i.e., enplanements) have already been exceeded by 2022 actual activity, FAA may consider updating the TAF to reflect the forecast numbers in this study.

**TABLE 2E | 2022 FAA Terminal Area Forecast**

| | 2022 | 2027 | 2032 | 2042 | CAGR |
|---|---|---|---|---|---|
| **ENPLANEMENTS** | | | | | |
| Air Carrier | 21,761 | 21,761 | 21,761 | 21,761 | **0.00%** |
| Commuter | 74,802 | 76,713 | 78,651 | 82,701 | **0.50%** |
| **Total Enplanements** | **96,563** | **98,474** | **100,412** | **104,462** | **0.39%** |
| **ANNUAL OPERATIONS** | | | | | |
| ***Itinerant*** | | | | | |
| Air Carrier | 1,151 | 1,151 | 1,151 | 1,151 | **0.00%** |
| Air Taxi & Commuter | 18,580 | 23,384 | 24,577 | 27,147 | **1.91%** |
| General Aviation | 17,089 | 20,063 | 20,971 | 22,913 | **1.48%** |
| Military | 549 | 549 | 549 | 549 | **0.00%** |
| ***Total Itinerant*** | ***37,369*** | ***45,147*** | ***47,248*** | ***51,760*** | ***1.64%*** |
| ***Local*** | | | | | |
| General Aviation | 19,734 | 28,703 | 30,168 | 33,326 | **2.65%** |
| Military | 298 | 298 | 298 | 298 | **0.00%** |
| ***Total Local*** | ***20,032*** | ***29,001*** | ***30,466*** | ***33,624*** | ***2.62%*** |
| **Total Operations** | **57,401** | **74,148** | **77,714** | **85,384** | **2.01%** |
| **Based Aircraft** | **240** | **263** | **288** | **344** | **1.82%** |

CAGR: Compound annual growth rate

*Source: FAA Terminal Area Forecast (February 2023)*

## MASTER PLAN FORECASTS 2015

The airport undertook a master plan update that was adopted by the Redding City Council in 2015. The forecasts for that master plan had a base year of 2013 and were approved by the FAA. **Table 2F** summarizes the primary demand indicators as forecast in that study.

Enplanements were projected to increase annually at 3.95 percent, increasing from 24,875 in 2013 to 56,100 in 2034. Total operations were projected to increase from 99,137 in 2013 to 127,700 in 2034 for an annual growth rate of 1.21 percent. The number of based aircraft were projected to increase from 218 in 2013 to 272 in 2034 for an annual growth rate of 1.06 percent.

The forecasts from the 2015 master plan predate the COVID-19 pandemic and the addition of two airlines which has resulted in substantial growth in passenger activity. Therefore, the forecasts from the previous master plan should be considered somewhat dated.

**TABLE 2F | Master Plan Forecasts (2013 base year)**

| | 2013 | 2019 | 2024 | 2034 | CAGR 2013-2034 |
|---|---|---|---|---|---|
| **Enplanements** | **24,875** | **45,800** | **49,200** | **56,100** | **3.95%** |
| **Air Cargo (lbs.)** | **1,480,000** | **1,728,000** | **1,839,000** | **2,077,000** | **1.63%** |
| **Based Aircraft** | **218** | **233** | **245** | **272** | **1.06%** |
| **OPERATIONS** | | | | | |
| ***Itinerant*** | | | | | |
| Air Carrier/Commuter/Air Taxi | 34,497 | 38,900 | 40,900 | 45,100 | 1.28% |
| General Aviation | 19,346 | 21,000 | 22,000 | 25,000 | 1.23% |
| Military | 393 | 400 | 400 | 400 | 0.08% |
| *Total Itinerant Operations* | 54,236 | 60,300 | 63,300 | 70,500 | 1.26% |
| ***Local*** | | | | | |
| General Aviation | 44,695 | 49,000 | 52,000 | 57,000 | 1.16% |
| Military | 206 | 200 | 200 | 200 | -0.14% |
| *Total Local Operations* | 44,901 | 49,200 | 52,200 | 57,200 | 1.16% |
| **Total Operations** | **99,137** | **109,500** | **115,500** | **127,700** | **1.21%** |

CAGR: Compound Annual Growth Rate

*Source: RDD Master Plan (2015)*

## TERMINAL CAPACITY STUDY FORECASTS

In mid-2022, the airport was already experiencing significant growth in passenger activity. In 2021, two new airlines had begun service (Avelo and Alaska), and both had begun to mature by the beginning of 2022. As a result, it was obvious that the terminal building was now undersized in most functional areas. Most notably was the passenger hold room at peak times which would exceed fire department capacity standards. One workaround employed was to delay TSA passenger screening until boarding which frequently resulted in delayed departures.

To address this immediate terminal building capacity need, the airport contracted with the current airport consulting engineer to develop a set of forecasts of aviation demand indicators that relate to terminal capacity. Specifically, passenger enplanements, commercial operations, and associated peak periods. **Table 2G** summarizes the *Terminal Capacity Study* forecasts, which are available in **Attachment 1** at the end of this forecast chapter.

The *Terminal Capacity Study* forecasts were developed primarily by analyzing the current and anticipated flight schedule and the departing seat loading factor (assumed at 85 percent). The flight schedule for August 2022 was used for the analysis. It was shown that there were four aircraft at the terminal building at around 7:00 p.m. on busy days (Fridays), two arrivals and two departures. Two of the aircraft were the 189 seat Boeing 737-800. As a result, the peak hour was determined to be 400, meaning the hold room should be able to accommodate 400 people at one time. The current capacity limit is 232 as determined by the fire department, and there are approximately 128 seats available.

**TABLE 2G | 2022 Terminal Capacity Forecasts**

| | 2022 | 2027 | 2032 | 2042 |
|---|---|---|---|---|
| **Passenger Activity** | | | | |
| Enplanements | 120,100 | 219,100 | 247,700 | 311,200 |
| Peak Month - Enplanements | 11,000 | 20,000 | 23,000 | 28,000 |
| Peak Day - Enplanements | 560 | 1,010 | 1,170 | 1,420 |
| Peak Hour - Enplanements | 200 | 370 | 430 | 520 |
| Peak Hour - Deplanements | 200 | 370 | 430 | 520 |
| **Total Passengers** | | | | |
| Annual | 24,200 | 438,200 | 495,400 | 622,400 |
| Peak Month | 22,000 | 40,000 | 46,000 | 56,000 |
| Peak Day | 1,120 | 2,020 | 2,340 | 2,840 |
| Peak Hour | 400 | 740 | 860 | 1,040 |
| **Commercial Operations** | | | | |
| Air Carrier | 1,308 | 3,460 | 3,860 | 4,800 |
| Air Taxi | 2,736 | 2,800 | 2,950 | 3,000 |
| Total Commercial Operations | 4,044 | 6,260 | 6,810 | 7,800 |

*Source: Terminal Capacity Forecasts - Mead & Hunt 2022*

## *COMMERCIAL SERVICE FORECASTS*

To evaluate commercial service potential at RDD and the facilities necessary to properly accommodate present and future airline activity, two basic elements must be forecast: annual enplaned passengers and annual airline operations. Annual enplaned passengers serve as the most basic indicator of demand for commercial passenger service activity. The combination of enplanements and deplanements generally equals the total number of passengers using an airport. The annual number of enplanements is the figure utilized by the FAA to determine various entitlement funding levels for commercial service airports.

***Enplanements are passenger boardings and are the basis for FAA entitlement funding for commercial service airports.***

The term "enplanement" refers to a passenger boarding an airline flight. Enplaning passengers are then described in terms of either "originating" or "connecting/transferring." Originating passengers depart a specific airport for a destination or hub airport to connect/transfer to another flight. Connecting/transferring passengers are those who have departed from another location and are using the airport as an intermediate stop. These passengers may disembark their originating flight to wait in the terminal for their next flight or could simply remain on the aircraft as an intermediate stop as a "through" passenger. Redding Regional Airport, and similar airports, tend to have mostly originating passengers, while larger hubs, like those in San Francisco or Denver, will have a more significant percentage of passengers who are connecting/transferring.

### HISTORICAL PASSENGER ACTIVITY

It is industry standard to develop forecasts of aviation demand based on the calendar year as opposed to a fiscal year.

The airport maintains monthly passenger activity level counts that each airline provides.

It is important to understand the various reporting categories for passenger activity which are as follows:

- Revenue Enplanements: These are passengers boarding aircraft having paid a fare.
- Non-Revenue Enplanements: These are passengers boarding an aircraft without paying a fare. Most typically these are rewards users or employees.
- Charters: These are passengers on private "for-hire" aircraft.
- Total Passengers: This is the total of enplaned and deplaned passengers.

**Table 2H** shows the monthly 2022 revenue and nonrevenue enplanement levels as obtained from the airport.

**Exhibit 2A** shows the historic passenger activity levels at RDD by airline. As can be seen, the airport is currently achieving record numbers of passengers. This is aided by the new service from two airlines: Avelo Airlines began service in May of 2021, and Alaska began service in June of 2021. United is also achieving record passenger levels as travelers emerge from the COVID-19 pandemic. These passenger activity levels are anticipated to continue to increase over the coming years as service expands to meet demand including a planned daily United flight to Denver. United has informed airport management that once they can address their pilot shortage, they will begin that service (anticipated in 2024).

**TABLE 2H | 2022 Monthly Passenger Levels by Airline**

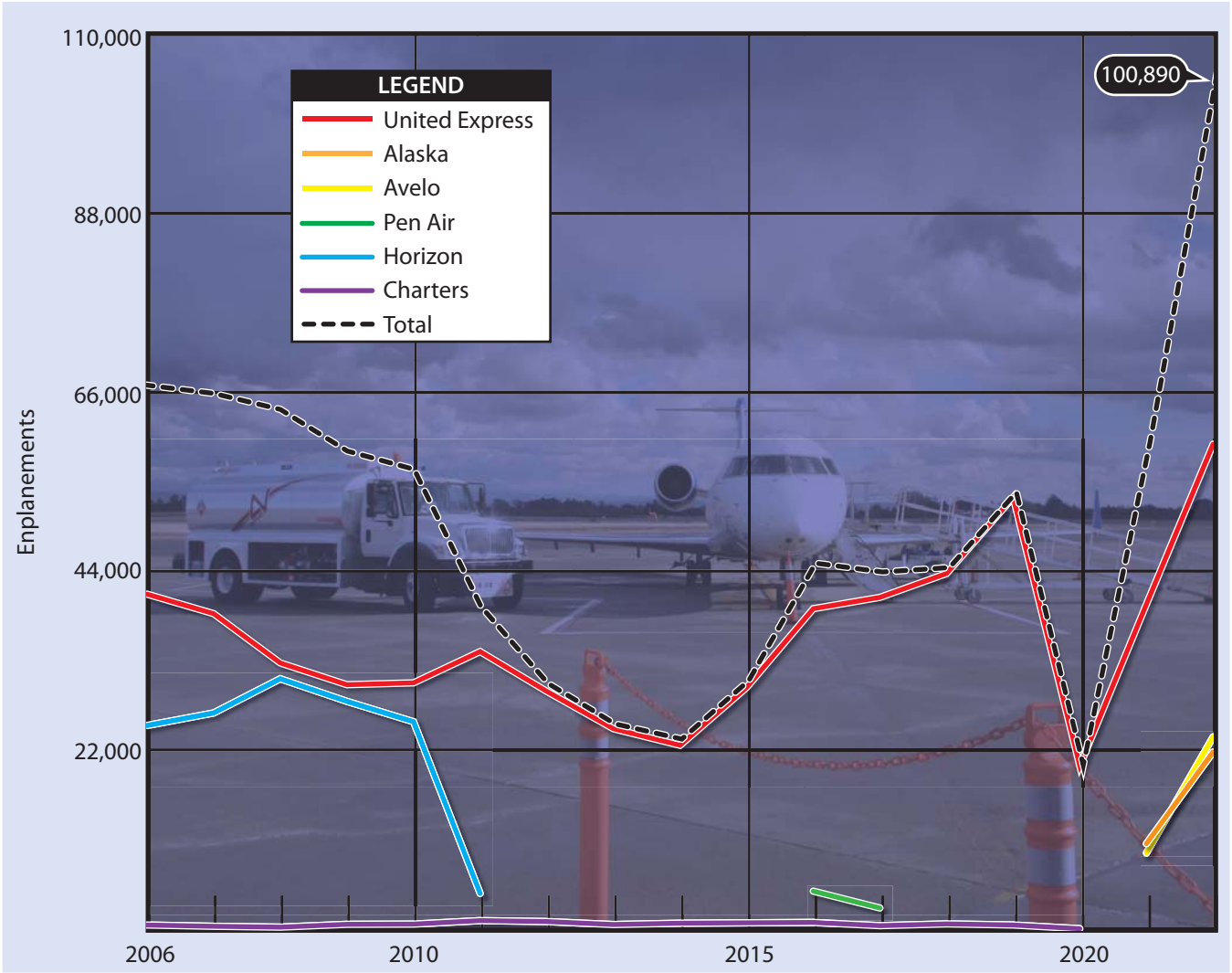
| | Jan | Feb | Mar | April | May | June | July | Aug | Sept | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alaska Revenue Enpl. | 1,223 | 1,269 | 1,457 | 1,612 | 1,963 | 1,943 | 2,019 | 1,959 | 2,001 | 1,894 | 1,832 | 1,493 | 20,665 |
| Alaska Nonrevenue Enpl. | 70 | 80 | 79 | 81 | 72 | 67 | 72 | 35 | 54 | 68 | 67 | 37 | 782 |
| Avelo Revenue Enpl. | 1,807 | 1,928 | 1,974 | 2,113 | 2,073 | 1,920 | 2,128 | 1,770 | 2,077 | 2,013 | 1,633 | 1,428 | 22,864 |
| Avelo Nonrevenue Enpl. | 0 | 5 | 3 | 2 | 0 | 7 | 13 | 2 | 2 | 1 | 6 | 2 | 43 |
| United Revenue Enpl. | 3,662 | 4,084 | 4,326 | 4,670 | 5,205 | 4,539 | 4,663 | 4,886 | 4,706 | 5,646 | 3,923 | 4,129 | 54,439 |
| United Nonrevenue Enpl. | 177 | 161 | 194 | 165 | 187 | 232 | 244 | 203 | 117 | 184 | 125 | 108 | 2,097 |
| Total Revenue Enpl. | 6,692 | 7,281 | 7,757 | 8,395 | 9,241 | 8,402 | 8,810 | 8,615 | 8,784 | 9,553 | 7,388 | 7,050 | 97,968 |
| Total Nonrevenue Enpl. | 247 | 246 | 276 | 248 | 259 | 306 | 329 | 240 | 173 | 253 | 198 | 147 | 2,922 |
| **Total Enplanements** | **6,939** | **7,527** | **8,033** | **8,643** | **9,500** | **8,708** | **9,139** | **8,855** | **8,957** | **9,806** | **7,586** | **7,197** | **100,890** |
| **Total Passengers** | **13,878** | **15,054** | **16,066** | **17,286** | **19,000** | **17,416** | **18,278** | **17,710** | **17,914** | **19,612** | **15,172** | **14,394** | **201,780** |

*Source: Airport monthly enplanement records*

## AIRLINE SERVICE

United Express operated by Skywest Airlines has been the mainstay serving passengers at RDD. Periodically others have served the market in the past including Pen Air and Horizon Air. In 2021, two new airlines initiated service: Alaska Airlines and Avelo Airlines. This new service has increased options for those utilizing RDD, and all three airlines have benefitted as passenger levels were soaring as of December 2022.

**Table 2J** summarizes the current (November 2022) airline services offered, the destinations served, and the aircraft typically used. Travelers can now take advantage of two daily flights to San Francisco and one daily departure to Los Angeles on United. The Los Angeles flight is typically the 50-seat CRJ200, and the San Francisco flight is typically the 70 seat CRJ-700 for the morning departure and evening arrival. The 50-seat CRJ-200 is typically used for the midday arrival and departure for SFO. Alaska currently offers a daily flight to Seattle utilizing the 76 seat ERJ-175. Avelo offers twice weekly departures to Burbank and Los Vegas (typically departures are Sundays and Thursdays) utilizing the 189-seat Boeing 737-800.




| Year | United Express | Alaska | Avelo | Pen Air | Horizon | Charters | Total |
|---|---|---|---|---|---|---|---|
| 2022 | 56,536 | 21,447 | 22,907 | - | - | - | 100,890 |
| 2021 | 39,980 | 10,526 | 9,371 | - | - | - | 59,877 |
| 2020 | 20,107 | - | - | - | - | 66 | 20,173 |
| 2019 | 53,117 | - | - | - | - | 519 | 53,636 |
| 2018 | 43,750 | - | - | - | - | 655 | 44,405 |
| 2017 | 40,816 | - | - | 2,608 | - | 436 | 43,860 |
| 2016 | 39,423 | - | - | 4,682 | - | 836 | 44,941 |
| 2015 | 29,740 | - | - | - | - | 787 | 30,527 |
| 2014 | 22,625 | - | - | - | - | 740 | 23,365 |
| 2013 | 24,657 | - | - | - | - | 577 | 25,234 |
| 2012 | 29,253 | - | - | - | - | 943 | 30,196 |
| 2011 | 34,151 | - | - | - | 4,398 | 1,059 | 39,608 |
| 2010 | 30,303 | - | - | - | 25,517 | 628 | 56,448 |
| 2009 | 30,072 | - | - | - | 28,026 | 603 | 58,701 |
| 2008 | 32,748 | - | - | - | 30,802 | 254 | 63,804 |
| 2007 | 38,812 | - | - | - | 26,599 | 360 | 65,771 |
| 2006 | 41,212 | - | - | - | 25,056 | 516 | 66,784 |

Note: Includes revenue and non-revenue passengers

Source: Airport monthly enplanement records

**TABLE 2J | RDD Airline Routes and Equipment**

| Airline | Routes Offered | Schedule (Nov. 2022) | Aircraft | Seats |
|---|---|---|---|---|
| United Express | RDD-SFO | 2 daily departures (M, T, W, Th, Fr, Sa)<br>1 daily departure (Sun) | CRJ-200 | 50/70 |
| United Express | RDD-LAX | 1 daily departure (M, T, W, Th, Fr, Sa, Sun) | CRJ-700 | 50 |
| Avelo Airlines | RDD-BUR | 2 weekly departures (Sun, Th; typ.) | Boeing 737-800 | 189 |
| Avelo Airlines | RDD-LAS | 2 weekly departures (Sun, Th; typ.) | Boeing 737-800 | 189 |
| Alaska Airlines | RDD-SEA | 1 daily departure (M, T, W, Th, Fr, Sa, Sun) | ERJ-175 | 76 |

*Source: Airport records.*

## Top 20 Destination Markets

The U.S. Department of Transportation maintains a rolling quarterly survey of 10 percent of all airline tickets sold for each commercial service airport. This Origin & Destination (O&D) Survey provides information on passenger's starting and ending cities and shows the volume of traffic between city pairs. This information is useful in assessing the strength of current service and/or possible new markets. In master plan forecasting, those potential markets can be used to develop realistic flight schedule scenarios in future years to aid in enplanement forecasting. The figures do not include "through" (connecting/transfer) passengers.

**Table 2K** presents the top 20 destinations from RDD for fiscal year 2010 and for the most recent four quarters available (April 2021-March 2022), which will be referred to as 2022. The top current destination is Burbank (BUR) which is capturing 17 percent of total enplanements. Avelo currently provides direct service to Burbank twice a week. The number two destination is Seattle which is capturing 11 percent of total enplanements and is served by daily departures from Alaska Airlines. Other direct airline service includes Las Vegas (#3 – Avelo), Los Angeles – LAX (#4-United), and San Francisco (#6-United).

**TABLE 2K | Top Twenty Destination Markets from RDD**

| | FISCAL YEAR 2010 | | | APRIL 2021-MARCH 2022 | | |
|---|---|---|---|---|---|---|
| Rank | Destination | Estimated Enplanements | % of Total Enplanements | Destination | Estimated Enplanements | % of Total Enplanements |
| 1 | LAX-Los Angeles (LA) | 17,216 | 31.4% | BUR-Burbank (LA) | 13,364 | 17.0% |
| 2 | SEA-Seattle | 4,541 | 8.3% | SEA-Seattle | 10,026 | 12.8% |
| 3 | ANC-Anchorage | 2,915 | 5.3% | LAS-Las Vegas | 8,633 | 11.0% |
| 4 | ACV-Humboldt | 2,779 | 5.1% | LAX-Los Angeles (LA) | 5,145 | 6.5% |
| 5 | PDX-Portland | 2,237 | 4.1% | SAN-San Diego | 3,292 | 4.2% |
| 6 | GEG-Spokane | 2,101 | 3.8% | SFO-San Francisco | 2,843 | 3.6% |
| 7 | SAN-San Diego | 1,898 | 3.5% | PHX-Phoenix | 1,646 | 2.1% |
| 8 | DFW-Dallas | 1,152 | 2.1% | PDX-Portland | 1,542 | 2.0% |
| 9 | LAS-Las Vegas | 1,152 | 2.1% | DEN-Denver | 1,473 | 1.9% |
| 10 | JFK-New York | 1,084 | 2.0% | SNA-Orange Co. (LA) | 1,450 | 1.8% |
| 11 | DEN-Denver | 1,017 | 1.9% | IAH-Houston | 1,347 | 1.7% |
| 12 | HNL-Hawaii | 813 | 1.5% | ORD-Chicago | 1,289 | 1.6% |
| 13 | PHX-Phoenix | 678 | 1.2% | MCO-Orlando | 1,266 | 1.6% |
| 14 | BOI-Boise | 610 | 1.1% | EWR-Newark (NYC) | 1,024 | 1.3% |
| 15 | BWI-Wash DC | 610 | 1.1% | ANC-Anchorage | 1,001 | 1.3% |
| 16 | ORD-Chicago | 610 | 1.1% | ONT-Ontario (LA) | 921 | 1.2% |
| 17 | SLC-Salt Lake | 610 | 1.1% | GEG-Spokane | 806 | 1.0% |
| 18 | BOS-Boston | 542 | 1.0% | SLC-Salt Lake | 806 | 1.0% |
| 19 | JNU-Juneau | 474 | 0.9% | DFW-Dallas | 783 | 1.0% |
| 20 | SBP-San Luis Obispo | 474 | 0.9% | AUS-Austin | 737 | 0.9% |
| **Total** | | **43,516** | **79.4%** | **Total** | **59,394** | **75.6%** |
| **Total Enplanements** | | **54,835** | | **Total Enplanements** | **78,571** | |

*Source: USDOT - Bureau of Transportation Statistics, Origin-Destination Survey of Airlines; T-100 Market Enplanements*

Airline service is currently being provided to five of the top six destinations as shown on **Exhibit 2B.** The available service, however, has limitations in the flight schedule, especially to Las Vegas and Burbank, which is twice a week service. Seattle and Los Angeles (LAX) are once a day service. If these flight schedules were expanded, more area travelers may look to RDD to begin their journeys.

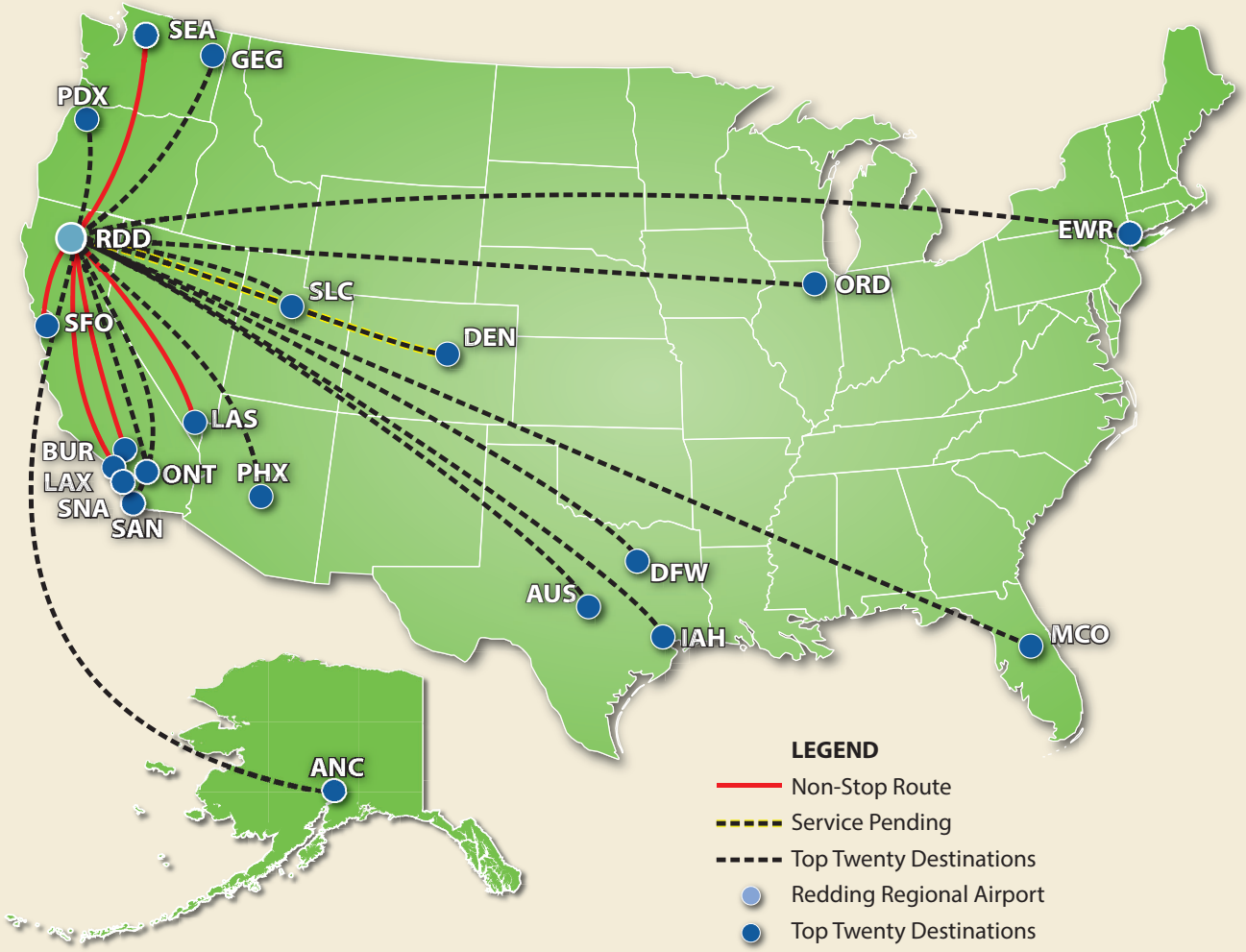
Several of the other markets in the top 20 that are not currently served may be viable for a new direct route from RDD. In fact, United has already indicated a desire to begin service to Denver and are currently trying to resolve a pilot shortage that is preventing the launch of that service. Since Denver is a major transfer city (like Seattle, San Francisco, and Los Angeles), it is likely that enplanement numbers would increase significantly (provided the schedule was favorable). Salt Lake City could be a viable destination since it is also a major transfer city and is a hub for Delta, and Skywest operates as Delta Connection in addition to operating as United Express at RDD currently. Other major destinations such as Houston and Chicago may make sense. Enplanement forecasting to follow will take into consideration reasonable future destinations and schedules.

## CATCHMENT AREA

The catchment area, or service area, is the geographical area from which most passenger activity can reasonably be expected to come from. The catchment area contains the population of travelers who could be expected to use RDD if all factors were equal such as drive time, convenience of the flight schedule, and distance to other airports. **Figure 2-1** shows the RDD catchment area as developed by Mead & Hunt in the *2022 Terminal Capacity Study* (reference **Attachment 1**). The catchment area is comprised of 56 zip codes and a population of 279,333 as of 2021. The *2022 Terminal Capacity Study* goes on to discuss the airline passenger true market for RDD as 429,512 people, which is described as follows from the report:

> The airline passenger true market for RDD was 429,512 annual origin and destination passengers in 2021, with 92 percent of these passenger traveling domestically. The true market was down by 27 percent since March 31, 2020, due to the COVID-19 pandemic; however, RDD's retention rate has increased by 10 percent over the same period. While fewer passengers are traveling overall, a higher percentage of true market passengers are choosing RDD over other area airports.
>
> In 2021, the top five markets with highest retention rates for RDD were Los Angeles, San Diego, Seattle, Phoenix, and Burbank. This true market analysis shows that RDD retains 27 percent of the true market while 73 percent of the true market uses other airports such as San Francisco (SFO) and Sacramento (SMF). Along with growth in visitation for the Los Angeles and San Diego markets, RDD has also been open to developing incentive packages such as offsetting startup costs, waiving landing fees and counter space to help foster growth in air service and in drawing airlines.

# TOP TWENTY DESTINATIONS/NON-STOP SERVICE CITY PAIRS




## Top Twenty Destinations

1. BUR-Burbank (LA)
2. SEA-Seattle
3. LAS-Las Vegas
4. LAX-Los Angeles (LA)
5. SAN-San Diego
6. SFO-San Francisco
7. PHX-Phoenix
8. PDX-Portland
9. DEN-Denver (service pending)
10. SNA-Orange Co. (LA)
11. IAH-Houston
12. ORD-Chicago
13. MCO-Orlando
14. EWR-Newark (NYC)
15. ANC-Anchorage
16. ONT-Ontario (LA)
17. GEG-Spokane
18. SLC-Salt Lake
19. DFW-Dallas
20. AUS-Austin

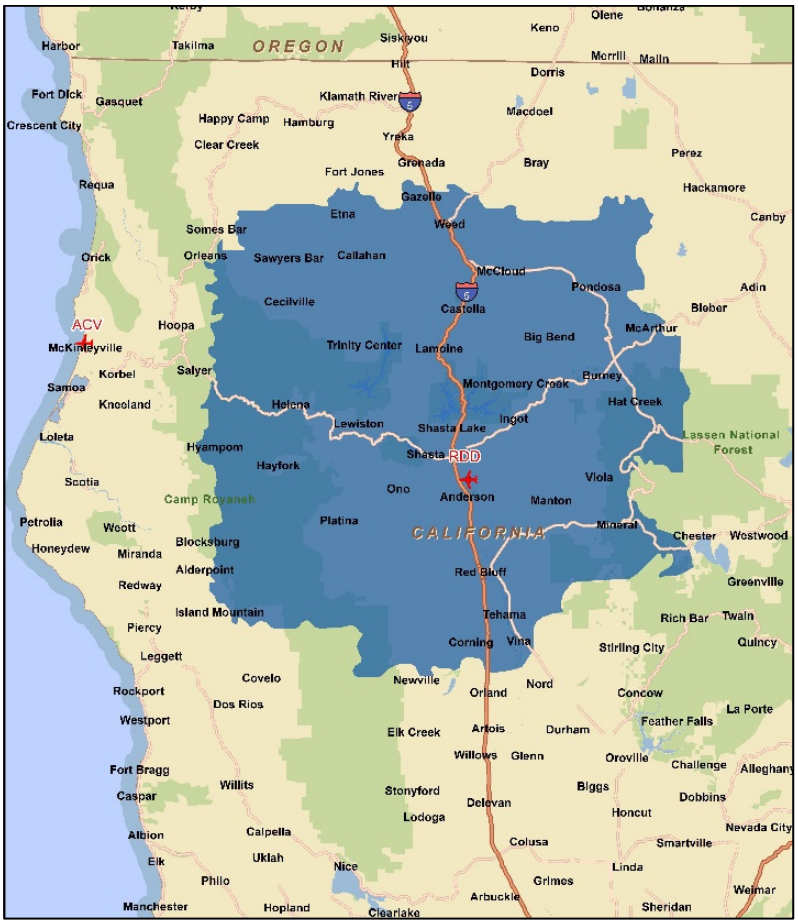



*Figure 2-1: RDD Catchment Area*

## NEW SERVICE CONSIDERATIONS

When developing an enplanement forecast it is necessary to consider plans for new or additional service, as well as plans that may reduce or eliminate existing service. Management at the Airport has been aggressive in working with air carriers to bring additional service to RDD. To that end, RDD has secured a Small Community Air Service Development Program (SCASDP) grant from the U.S. Department of Transportation (USDOT). This grant will provide a one-million-dollar revenue guarantee ($760,000 from USDOT and $240,000 from City of Redding) to United Airlines to provide daily service to/from Denver. **Attachment 2** provides the official USDOT SCASDP grant announcement, email confirmation from USDOT of the award, and a letter of support from United Airlines. Additional efforts are underway within the City of Redding to secure an additional one million dollars, through the Economic Development Department.

The service to Denver is anticipated to begin in 2024. The anticipated aircraft is the Embraer 175 (76 seats). An anticipated load factor of 85 percent would result in 23,579 annual enplanements from this service.

Airport management is also in discussions with Avelo and Alaska to begin service to San Diego which is a top five destination market for RDD. There is also interest from airlines to add additional flights to existing markets.

## ENPLANEMENT FORECAST

As discussed in this chapter's introduction, the first step involved in updating an airport's forecasts include reviewing previous forecasts to determine recent trends. After that comes consideration of any new factors that could impact the forecasts, such as changes in the socioeconomic climate or the effects of changes in air carrier services. At RDD, there have been significant changes to the passenger activity levels that must be taken into consideration. In 2021 two new airlines, Alaska and Avelo, began service. As with all new passenger service, it takes several months to a year for that service to become familiar to area travelers and to be sustainable. By June 2022, both airlines were experiencing high passenger levels and the result has been exceptional passenger enplanement growth. As noted previously, in 2022 there were 100,890 enplanements which is a 53 percent increase over the previous year when there were 60,292 enplanements. Because of this exceptional growth in the very recent past, traditional forecasting methods that utilize historical trendline or regression analysis will be negatively skewed and are therefore not employed in this analysis. Rather, a more detailed analysis of various schedule and equipment scenarios will be undertaken. This is a similar approach to that taken in the August 2022 *Terminal Capacity Study* forecasts.

### Review of Previous Enplanement Forecasts

There are three existing forecasts of enplanement activity at the airport to consider which are summarized in **Table 2L**. The 2015 master plan had a long-term (2034) enplanement forecast of 56,100. Actual enplanements have far exceeded the master plan forecasts, therefore, the master plan forecasts are out of date and will not be considered further in this study. The 2022 TAF had a long-term (2042) enplanement forecast of 104,462. With the airport having 100,890 enplanements in 2022, and continued growth anticipated, it appears the TAF long-range forecast could be exceeded as early as 2023. As such, the TAF forecast numbers are not considered as the selected forecast for this study, but they will serve as a point of comparison for FAA forecast approval.

**TABLE 2L | Previous Enplanement Forecasts**

| Year | 2022 Terminal Capacity Study Forecast |
|---|---|
| 2022 | 120,100 |
| 2027 | 219,100 |
| 2032 | 247,700 |
| 2042 | 311,200 |
| CAGR | 4.88% |
| **Year** | **2015 Master Plan** |
| 2013 | 24,875 |
| 2019 | 45,800 |
| 2024 | 49,200 |
| 2034 | 56,100 |
| CAGR | 4.15% |
| **Year** | **Terminal Area Forecast (2022)[1]** |
| 2022 | 96,563 |
| 2027 | 98,474 |
| 2032 | 100,412 |
| 2042 | 104,462 |
| CAGR | 0.39% |

CAGR: Compound annual growth rate
[1] TAF published February 2023

The *Terminal Capacity Study* forecasts were completed in August of 2022, and great effort was made to address the significant growth occurring at the time. The enplanement forecast was developed by projecting the number of departing seats and applying an average load factor. This forecast will be considered moving forward; however, it is well outside the TAF tolerance for FAA forecast approval. Therefore, several new forecasts of enplanements will be developed.

### Travel Propensity Enplanement Forecast

There are a variety of local factors that affect the potential for passengers within an area. A key statistic to consider is the relationship of the airport's enplanements with the populace it serves. The ratio of enplanements to population is termed the Travel Propensity Factor (TPF). The TPF is predominantly impacted by the proximity of an airport to other regional airports with higher levels of service or "hub" airports. Regional airports with higher TPF ratios tend to be located farther from hub airports in relatively isolated areas, like RDD. These airports generally have a service area that extends into adjacent, well-populated regions or have some type of air service advantage that attracts more of those passengers that might otherwise choose to drive to a more distant hub airport. Generally, the higher the travel propensity factor, the more likely air travelers are to utilize the local airport.

Two enplanement forecasts based on the TPF have been developed and are presented in **Table 2M**. The first considers applying the 2022 TPF as a constant in relation to forecast population growth. This forecast results in an annual growth rate of 0.40 percent and 109,242 enplanements by 2042. The second TPF forecast considers an increasing TPF that is more reflective of the recent enplanement growth at the airport. This forecast results in 317,214 enplanements by 2042 and an annual growth rate of 5.89 percent.

**TABLE 2M | Enplanement Projection Based on Travel Propensity Factor (TPF)**

| Year | Enplanements | County Population | TPF |
|---|---|---|---|
| 2019 | 52,726 | 182,224 | 0.2893 |
| 2020 | 20,286 | 181,893 | 0.1115 |
| 2021 | 60,292 | 182,139 | 0.3310 |
| 2022 | 100,980 | 183,102 | 0.5510 |
| **Constant Share of 2022 TPF (CAGR = 0.40%)** | | | |
| 2027 | 103,378 | 187,617 | 0.5510 |
| 2032 | 105,627 | 191,699 | 0.5510 |
| 2042 | 109,242 | 198,259 | 0.5510 |
| **Increasing Share TPF (CAGR = 5.89%)** | | | |
| 2027 | 150,094 | 187,617 | 0.8000 |
| 2032 | 191,699 | 191,699 | 1.0000 |
| 2042 | 317,214 | 198,259 | 1.6000 |

CAGR: Compound Annual Growth Rate

*Source: Airport records.*

### Market Share of Domestic Enplanements Forecast

The next forecasting method employed considers the airport's historic market share of U.S. domestic airline enplanements. National forecasts of U.S. domestic airline enplanements are compiled each year by the FAA and consider the state of the economy, fuel prices, and prior year developments. According to the most recent publication, *FAA Aerospace Forecasts, Fiscal Years 2022-2042*, domestic passenger enplanements are forecast to increase at an average annual rate of 3.6 percent over the 20-year forecast period.

Three enplanement forecasts have been developed as a market share percent of national domestic airline enplanement forecasts, as shown in **Table 2N**.

The first considers RDD maintaining its 2022 percent of national enplanements (0.01566 percent) which results in 206,344 enplanements by 2042. This forecast might normally represent a high range if it were not for the fact that RDD passengers have shown that if service is made available, they will use it.

**Table 2N | Forecasts Based on US Domestic Enplanement Estimates**

| Year | RDD Enplanements[1] | US Domestic Enplanements (millions)[2] | RDD Market Share |
|---|---|---|---|
| 2019 | 52,726 | 813 | 0.00649% |
| 2020 | 20,286 | 462 | 0.00439% |
| 2021 | 60,292 | 507 | 0.01189% |
| 2022 | 100,980 | 645 | 0.01566% |
| **Constant Market Share of U.S. Domestic Enplanements (CAGR = 3.64%)** | | | |
| 2027 | 143,094 | 914 | 0.01566% |
| 2032 | 160,002 | 1,022 | 0.01566% |
| 2042 | 206,344 | 1,318 | 0.01566% |
| **Increasing Market Share of U.S. Domestic Enplanements (CAGR = 6.69%)** | | | |
| 2027 | 182,800 | 914 | 0.02000% |
| 2032 | 245,280 | 1,022 | 0.02400% |
| 2042 | 369,040 | 1,318 | 0.02800% |
| **Blended Market Share of U.S. Domestic Enplanements (CAGR = 6.09%)** | | | |
| 2027 | 182,800 | 914 | 0.02000% |
| 2032 | 245,280 | 1022 | 0.02400% |
| 2042 | 329,500 | 1,318 | 0.25000% |

[1] Airport records for history
[2] FAA Aerospace Forecasts 2022-2042

The second market share of national domestic enplanements forecast considers an increasing ratio, which is reflective of what has happened at RDD over the last year two years. This forecast projects up to 369,040 enplanements by 2042. This is likely the high range the airport could expect considering the population of the catchment area and the true market area; however, when convenient flights are made available at RDD, travelers tend to use it.

A third forecast based on the FAA forecast of domestic airline enplanements is a blended forecast of the other two market share forecasts. This forecast utilizes the five-year and ten-year market share ratio from the increasing market share projection but then tempers the 10-year to 20- year projection. The reason for tempering the long-term forecast is that all airports will ultimately find an equilibrium once reliable schedules and service are established and there is a limit on long-term growth because there is a defined catchment and true market population.

### TAF Growth Rate Forecast Plus Denver Service

Due to the circumstances at RDD, with enplanement levels nearly doubling from 2021 to 2022, anticipated new daily service to Denver, and the FAA requirement that the forecast be within a certain range of the TAF, a constrained enplanement forecast is considered. This forecast applies the TAF annual growth rate of 0.39 percent to the established 2022 baseline of 100,890 enplanements and extends that growth over the 20-year planning horizon. This forecast also takes into consideration the fact that United Airlines has committed to providing daily service to Denver once a pilot shortage is resolved. **Attachment 2** documents the SCASDP grant awarded to RDD for this service which will provide a one-million-dollar revenue guarantee. This service is anticipated to begin in 2024.

**Table 2P** presents this enplanement forecast. The first column is the year. The second column is the 2022 TAF enplanement numbers. The third column is the TAF growth rate of 0.39 percent as applied to the actual base year enplanement level of 100,890 and then carried forward each year for the 20-year forecast. The fourth column provides notes related to the TAF growth rate forecast in column three. In 2024, the estimated Denver enplanements are added to the total which accounts for the jump to 125,257 enplanements. The fifth column then maximizes the TAF tolerance, which is 10 percent in years 1-5 and 15 percent in years 6-20. An additional 10 percent of enplanements are added to the years 2023 through 2027. An additional 15 percent is added to the years 2028 to 2042. The last column shows the percent difference between the 2022 TAF growth rate forecast (column 3) and the TAF Growth Rate Plus 10%/15% Range Parameters (column 5). The result is an enplanement forecast that is within the FAA TAF tolerance range.

**TABLE 2P | TAF Growth Rate Plus Denver Service Enplanement Forecast**

| Year | 2022 TAF[1] | TAF Growth Rate[2] | Notes | TAF Growth Rate Plus 10%/15% Range Parameters[3] | Notes | % Difference |
|---|---|---|---|---|---|---|
| 2022 | 96,563 | 100,890 | Base year actual enplanements | **100,890** | Base year actual | 0.00% |
| 2023 | 96,942 | 101,283 | TAF growth rate of 0.39% | **111,412** | Add 10% | 9.09% |
| 2024 | 97,323 | 125,257 | TAF growth rate of 0.39% + 23,579 for DEN service | **137,783** | Add 10% | 9.09% |
| 2025 | 97,706 | 125,746 | TAF growth rate of 0.39% | **138,321** | Add 10% | 9.09% |
| 2026 | 98,090 | 126,236 | TAF growth rate of 0.39% | **138,860** | Add 10% | 9.09% |
| 2027 | 98,474 | 126,729 | TAF growth rate of 0.39% | **139,402** | Add 10% | 9.09% |
| 2028 | 98,858 | 127,223 | TAF growth rate of 0.39% | **146,306** | Add 15% | 13.04% |
| 2029 | 99,242 | 127,719 | TAF growth rate of 0.39% | **146,877** | Add 15% | 13.04% |
| 2030 | 99,631 | 128,217 | TAF growth rate of 0.39% | **147,450** | Add 15% | 13.04% |
| 2031 | 100,020 | 128,717 | TAF growth rate of 0.39% | **148,025** | Add 15% | 13.04% |
| 2032 | 100,412 | 129,219 | TAF growth rate of 0.39% | **148,602** | Add 15% | 13.04% |
| 2033 | 100,809 | 129,723 | TAF growth rate of 0.39% | **149,182** | Add 15% | 13.04% |
| 2034 | 101,206 | 130,229 | TAF growth rate of 0.39% | **149,764** | Add 15% | 13.04% |
| 2035 | 101,603 | 130,737 | TAF growth rate of 0.39% | **150,348** | Add 15% | 13.04% |
| 2036 | 102,004 | 131,247 | TAF growth rate of 0.39% | **150,934** | Add 15% | 13.04% |
| 2037 | 102,414 | 131,759 | TAF growth rate of 0.39% | **151,523** | Add 15% | 13.04% |
| 2038 | 102,819 | 132,273 | TAF growth rate of 0.39% | **152,114** | Add 15% | 13.04% |
| 2039 | 103,229 | 132,789 | TAF growth rate of 0.39% | **152,707** | Add 15% | 13.04% |
| 2040 | 103,638 | 133,306 | TAF growth rate of 0.39% | **153,302** | Add 15% | 13.04% |
| 2041 | 104,047 | 133,826 | TAF growth rate of 0.39% | **153,900** | Add 15% | 13.04% |
| 2042 | 104,462 | 134,348 | TAF growth rate of 0.39% | **154,500** | Add 15% | 13.04% |
| **CAGR 2022-2042** | **0.39%** | **1.44%** | | **2.15%** | | |

[1]2022 Terminal Area Forecast published Feb. 2023.
[2]TAF growth rate of 0.39% applied to 2022 actual enplanements and carried to plan years
[3]TAF Growth Rate column plus 10% enplanements in years 1-5 and 15% enplanements in years 6-20.

## ENPLANEMENT FORECAST SUMMARY

Four different approaches to forecasting enplanements have been presented. The first is a review of existing forecasts. The TAF was not considered because current enplanement levels exceed the TAF forecast. The 2015 master plan forecast is aged and has also been exceeded by recent enplanement levels. The *Terminal Capacity Study* enplanement forecasts were completed in August 2022. While the enplanement forecast in the terminal study did account for the recent exceptional growth, it appears now that it was overly optimistic. Therefore, none of the existing forecasts reviewed are the selected forecast for this master plan.

The second approach to forecasting enplanements considered the relationship of current enplanements to the county population, which is called the travel propensity factor. Both a constant and an increasing market share of TPF were presented. The constant share forecast is relatively flat and is not reflective of the current growth trends. The increasing TPF forecast resulted in nearly 320,000 enplanements by 2042. This appears to be very aggressive (like the Terminal Capacity Study forecast) and is well outside FAA TAF tolerance. Therefore, this forecast is not the selected forecast.

The third approach was to compare current RDD enplanement levels to the FAA national enplanement forecast. Three forecasts were developed using this approach: a constant and increasing market share and a blended market share forecast. The blended market share forecast tempered enplanement growth in the long-term period (years 10-20) by assuming that the current substantial growth trends will find an equilibrium between flight schedules and the travelling public.

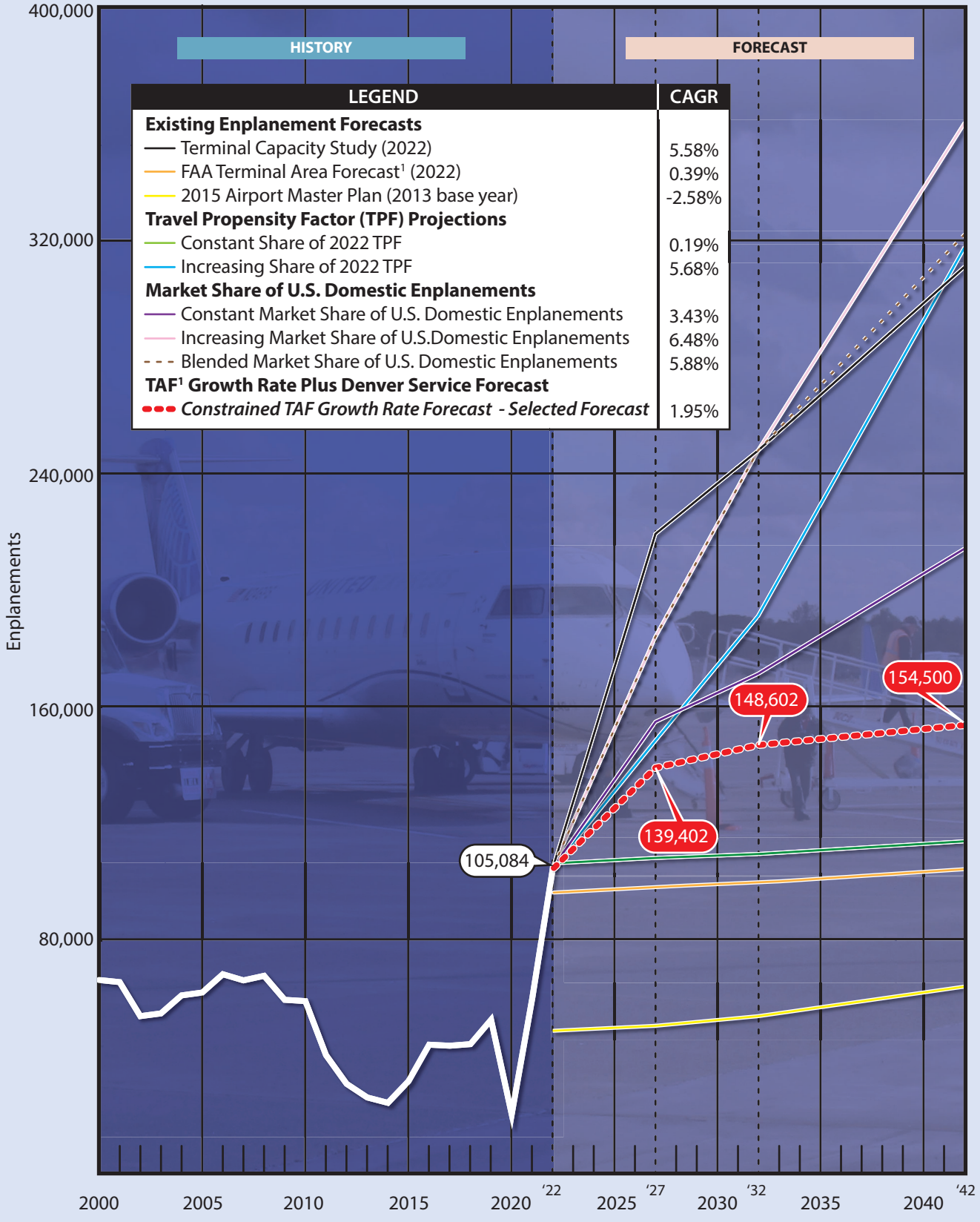
Following consultation with FAA, a fourth approach was undertaken. FAA recognized that the TAF is currently understating enplanements and that new daily service to Denver was likely. Therefore, a constrained enplanement forecast was developed that includes the Denver service, while applying the TAF annual growth rate (0.39 percent) to subsequent years.

**Table 2Q and Exhibit 2C** summarize each of the enplanement forecasts considered. The *Terminal Capacity Study* forecast was initially preferred by airport management. Management is optimistic that recent trends will continue based on already having secured funding for a new route to Denver, the possibility of other new routes, and the possibility of additional flights to existing markets. However, this forecast is well outside of the TAF tolerance and FAA will only consider forecast approval if there is reasonable evidence that the growth will occur. The planned Denver flight is considered reasonable but other efforts to add service have not become ripe yet. Therefore, the *Terminal Capacity Study* enplanement forecast is not the selected forecast for this master plan study.

**TABLE 2Q | Enplanement Projection Summary**

| 2022 Enplanements - 100,890 | 2027 | 2032 | 2042 | CAGR 2022-2042 |
|---|---|---|---|---|
| **Existing Enplanement Forecasts** | | | | |
| Terminal Capacity Study (2022) | 219,100 | 247,700 | 311,200 | **5.58%** |
| FAA Terminal Area Forecast (2022)[1] | 98,474 | 100,412 | 104,462 | **0.39%** |
| 2015 Airport Master Plan (2013 base year) | 51,176 | 54,647 | 62,311 | **-2.58%** |
| **Travel Propensity Factor (TPF) Projections** | | | | |
| Constant Share of 2022 TPF | 103,378 | 105,627 | 109,242 | 0.19% |
| Increasing Share of 2022 TPF | 150,094 | 191,699 | 317,214 | 5.68% |
| **Market Share of U.S. Domestic Enplanements** | | | | |
| Constant Market Share of U.S. Domestic Enplanements | 143,094 | 160,002 | 206,344 | 3.43% |
| Increasing Market Share of U.S. Domestic Enplanements | 182,800 | 245,280 | 369,040 | 6.48% |
| Blended Market Share of U.S. Domestic Enplanements | 182,800 | 245,280 | 329,500 | 5.88% |
| **TAF Growth Rate Plus Denver Service Forecast** | | | | |
| Constrained TAF Growth Rate Forecast | 139,402 | 148,602 | 154,500 | 1.95% |
| **SELECTED FORECAST** | **139,402** | **148,602** | **154,500** | **1.95%** |

[1] TAF published in February 2023.
CAGR: Compound annual growth rate




CAGR: Compound Annual Growth Rate
[1]TAF published in Feb. 2023

The TAF forecast can be a selected forecast, however TAF forecasts are not meant to replace a local forecasting effort and are instead intended to provide guidance. The TAF forecast has also already been exceeded by actual enplanements in 2022. Therefore, the TAF itself is not selected for this master plan, however, the FAA has indicated that the TAF annual growth rate of 0.39 percent is reasonable.

The 2015 Master Plan forecast is too old and out of date to be considered for this master plan. Even the long-range forecast from the 2015 master plan has already been exceeded by a significant amount.

The two enplanement forecasts developed using the travel propensity factor (TPF) present a wide range. The constant share TPF would clearly be exceeded as soon as the Denver service comes online and is thus not the selected forecast. The increasing share TPF forecast is more in line with the Terminal Capacity Study forecast and is thus not selected because it would be outside TAF tolerance.

None of the three market share of U.S. domestic enplanements forecasts are selected because these exceed guidance provided by FAA (to be within TAF tolerance). While the constant market share forecast appears reasonable by doubling enplanements within 20-years (as occurred from 2019-2022), the FAA requires tangible assurances from airlines that additional service is coming (like the Denver service).

Therefore, the selected enplanement forecast is the one developed by applying the TAF annual growth rate (0.39 percent) and including an estimate of the enplanements generated by the future Denver service. The enplanement figures that resulted were then increased by 10 percent in the first five years and 15 percent in years six-20. This places the selected enplanement forecast within the FAA TAF tolerance. This forecast was developed with consultation and guidance from FAA. This forecast results in 154,400 enplanements by 2042 for an annual growth rate of 1.95 percent.

**High Range Supplemental Forecast**

Airport management is aggressively pursuing additional air service options. As noted, a daily Denver flight, supported by a USDOT grant and other minimum revenue guarantees, is slated to come online in 2024. They are also in continuing discussions with current operators to add additional flights to existing markets and to add other new routes such as San Diego. Airport management has asked that this master plan consider an additional forecast parameter, a high range of 311,200 enplanements, as outlined in the *Terminal Capacity Study* (**Attachment 1**). There is no year or timeframe associated with the high range forecast, but should the airport realize accelerated growth, then airport management will have the data needed to plan accordingly. The high range forecast is not part of the official forecast for this master plan and will not be approved by FAA.

## AIRLINE OPERATIONS FORECAST

The commercial service aircraft fleet mix defines several key parameters in airport planning including terminal complex layout, maximum stage length capabilities (affecting runway length evaluations), and in some cases, the critical aircraft (for pavement design and ramp geometry). The airline operations

forecast is a function of aircraft utilization and the boarding load factor (BLF). The BLF is the ratio of enplanements to available seats. Monthly enplanement data by airline was utilized in this analysis. **Table 2R** shows the number of departure operations by each airline and aircraft type for 2022.

**TABLE 2R | Commercial Departures by Airline and Available Seats (2022)**

| | Departures | | | |
|---|---|---|---|---|
| **Month** | **Alaska (ERJ-175) (76 Seats)** | **Avelo (737-800) (189 Seats)** | **United (CRJ-200) (50 Seats)** | **United (CRJ-700) (70 Seats)** |
| Jan | 30 | 18 | 90 | 30 |
| Feb | 28 | 17 | 82 | 30 |
| March | 31 | 21 | 93 | 30 |
| April | 29 | 19 | 90 | 30 |
| May | 31 | 18 | 96 | 30 |
| June | 31 | 17 | 89 | 30 |
| July | 31 | 18 | 93 | 30 |
| August | 31 | 18 | 94 | 30 |
| September | 30 | 18 | 82 | 30 |
| October | 31 | 18 | 91 | 30 |
| November | 28 | 16 | 60 | 30 |
| December | 26 | 15 | 62 | 30 |
| Total Departures | 357 | 213 | 1,022 | 360 |
| Percent of Total Departures | 18.29% | 10.91% | 52.36% | 18.44% |
| Enplanements | 21,447 | 22,907 | 56,536 | |
| Total Seats | 27,132 | 40,257 | 51,100 | 25,200 |
| Boarding Load Factor (BLF) | 79.05% | 56.90% | 74.10% | |

*Source: Airline enplanement and equipment records from the airport.*

Alaska Airlines currently utilizes the 76-seat Embraer 175 regional jet. Alaska had 357 departures and 21,447 enplanements in 2022 for a BLF of 79 percent. Avelo Airlines currently utilizes the Boeing 737-800 configured for 189 seats. Avelo had 213 departures and 22,907 enplanements in 2022 for a BLF of 57 percent. United Express uses both the Canadair 200 and 700 model aircraft with 50 and 70 seats, respectively. In 2022, there were a total of 1,952 departures and a combined BLF of 70 percent.

**Table 2S** presents the projected airline fleet mix and operations forecast. This analysis requires certain assumptions for aircraft utilization and BLF. The CRJ-200 has long been out of production, and most airlines are replacing their CRJ-200 fleet with larger CRJ-700/900 models. Therefore, the CRJ-200 is assumed to be phased out of service at RDD and replaced by a larger aircraft. Other assumptions such the addition of more routes and destinations are considered. The BLF is assumed to increase over time from the current 70 percent to 85 percent in the long term.

**Table 2S | Airline Fleet Mix and Operations Forecast**

| Seating Capacity | Projected Aircraft | HISTORICAL | | FORECAST | | | |
|---|---|---|---|---|---|---|---|
| | | 2021 | 2022 | 2027 | 2032 | 2042 | High Range |
| 159 | B737-900 | 0.0% | 0.0% | 0.0% | 0.0% | 10.0% | 10.0% |
| 189 | B737-800 | 6.5% | 10.9% | 16.0% | 20.0% | 25.0% | 30.0% |
| 150 | A320 | 0.0% | 0.0% | 0.0% | 10.0% | 25.0% | 25.0% |
| 90 | CRJ-900 | 0.0% | 0.0% | 0.0% | 30.0% | 20.0% | 20.0% |
| 76 | ERJ-175 | 15.0% | 18.3% | 25.0% | 30.0% | 10.0% | 10.0% |
| 70 | CRJ-700 | 22.0% | 18.4% | 30.0% | 10.0% | 10.0% | 5.0% |
| 50 | CRJ-200 | 56.5% | 52.4% | 29.0% | 0.0% | 0.0% | 0.0% |
| **Total** | | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |
| Avg. Seats per Departure | | 67.3 | 73.6 | 84.7 | 109.6 | 133.3 | 139 |
| Boarding Load Factor | | 67.3% | 70.2% | 85.0% | 85.0% | 85.0% | 85.0% |
| Enplaned per Departure | | 45 | 52 | 72 | 93 | 113 | 113 |
| Annual Enplanements | | 60,292 | 100,890 | 139,402 | 148,602 | 154,500 | 311,200 |
| Annual Departures | | 1,330 | 1,952 | 1,935 | 1,595 | 1,364 | 2,748 |
| Annual Operations | | 2,661 | 3,905 | 3,871 | 3,190 | 2,728 | 5,495 |

In 2022, there were 3,905 airline operations. As airlines continue to "up-gauge", meaning replacing older aircraft with new aircraft that have more seating capacity, the total number of commercial operations will decrease.

Airline operations are classified as either commuter/air taxi or air carrier. Commuter aircraft are those with fewer than 60 seats, and air carrier aircraft have more than 60 seats. The CRJ-200 is thus classified as a commuter aircraft and accounted for an 1,022 departures (2,044 operations) in 2022. Air carrier departures totaled 930 (1,860 operations) in 2022. In the short term, it is anticipated there will still be some commuter/air taxi aircraft in service at RDD; however, by the intermediate term (within 10-years) only air carrier aircraft are anticipated to be in service at RDD.

### AIRLINE/PASSENGER PEAKS

Airline/passenger peak period forecasts provide an estimate of the current adequacy of terminal building functional areas and when terminal facility improvements may be needed. Terminal building improvement or expansion projects can take many years to plan (including funding), therefore, it is important to anticipate those needs. Terminal expansion projects are not typically designed around the busiest day of the year, instead they are designed around a design day or design hour, which is an average of peak days.

The following peaking characteristics have been estimated:

- **Peak Month Enplanements:** The peak month in the calendar year for enplanements. The peak enplanement month of 2022 was October when there were 9,806.

- **Design Day Enplanements:** The average of the top four peak days enplanements of the peak month. Note that the November schedule and aircraft seating capacity was used for this analysis because the data for October was not available. According to airport staff, the schedules were largely the same between October and November, and enplanement levels were also similar.

  The design day enplanement figure was calculated by taking the four busiest days of November (based on available departing seats) and averaging them and then multiplying that figure by the estimated BLF of 85 percent. The four days with the most departing seats were November 4, 7, 10, and 13, and each of these days (and several others) had 624 available departing seats; therefore, the average was 624 available departing seats. By applying a BLF of 85 percent, the design day results in 530 enplanements on these days in November of 2022. **Exhibit 2D** provides supporting information about the seating capacity availability used in the design day determination.

- **Design Hour Enplanements:** This was calculated by averaging the busiest hour of each of the peak days (Nov. 4, 7, 10, and 13) and multiplying that by the BLF estimate of 85 percent. The design hour averages 214 total departure seats, 85 percent of which is 182. The result is a design hour enplanement level of 182. **Exhibit 2E** presents a graph of the hourly aircraft seating capacity for the four peak days.

- **Design Hour Deplanements:** This was calculated by averaging the top hour of each of the peak days for arrival seats and multiplying that by the BLF estimate of 85 percent. On average there are 287 arrival seats, 85 percent of which is 244. The result is a design hour deplanement level of 244. **Table 2T** summarizes the design hour calculations.

**TABLE 2T | Design Hour Passenger Peaks (Nov. 2022)**

| Date | Peak Hour Departure Seats | Peak Hour Enplanements | Peak Hour Arrival Seats | Peak Hour Deplanements |
|---|---|---|---|---|
| 4-Nov | 189 | 161 | 335 | 285 |
| 7-Nov | 189 | 161 | 335 | 285 |
| 10-Nov | 239 | 203 | 239 | 203 |
| 13-Nov | 239 | 203 | 239 | 203 |
| **Average** | **214** | **182** | **287** | **244** |

*Source: Coffman Associates analysis*

- **Total Passenger Peaks:** Double the enplanement and deplanement peaks.

- **Airline Operations:** Airline operations include both air carrier and commuter operations. The airport provided records of airline operations for the calendar year 2022.

**Table 2U** summarizes the airline peak periods. These figures will be utilized in the terminal capacity analysis to be presented in the next chapter, Facility Requirements.

**TABLE 2U | Airline Peak Periods**

| | | | FORECAST | | | |
|---|---|---|---|---|---|---|
| | Factor | 2022 | 2027 | 2032 | 2042 | High Range |
| **Enplanements** | | | | | | |
| Annual | 100% | 100,890 | 139,402 | 148,602 | 154,500 | 311,200 |
| Peak Month | 9.72% | 9,806 | 13,549 | 14,443 | 15,017 | 30,247 |
| Design Day | 5.40% | 530 | 732 | 781 | 812 | 1,635 |
| Design Hour | 34.32% | 182 | 251 | 268 | 279 | 561 |
| **Deplanements** | | | | | | |
| Design Hour | 46.03% | 244 | 337 | 359 | 374 | 752 |
| **Total Passenger Peaks** | | | | | | |
| Annual | 100% | 201,780 | 278,803 | 297,204 | 309,001 | 622,400 |
| Peak Month | 9.72% | 19,612 | 27,098 | 28,887 | 30,033 | 60,494 |
| Design Day | 5.40% | 1,060 | 1,465 | 1,561 | 1,623 | 3,270 |
| Design Hour | 40.17% | 426 | 588 | 627 | 652 | 1,314 |
| **Visitor Peak** | | | | | | |
| Design Hour Visitor Peak | 58% | 247 | 341 | 364 | 378 | 762 |
| **Airline Operations** | | | | | | |
| Annual | 100% | 3,905 | 3,871 | 3,190 | 2,728 | 5,495 |
| Peak Month | 8.97% | 350 | 347 | 286 | 245 | 493 |
| Peak Day | 3.43% | 12 | 12 | 10 | 8 | 17 |
| Peak Hour | 33.33% | 4 | 4 | 3 | 3 | 6 |
| **Departures** | | | | | | |
| Design Day | NA | 6 | 6 | 5 | 4 | 9 |
| Design Hour | NA | 2 | 2 | 2 | 1 | 3 |
| **Arrivals** | | | | | | |
| Design Day | NA | 6 | 6 | 5 | 4 | 8 |
| Design Hour | NA | 2 | 2 | 2 | 1 | 3 |

*Source: Coffman Associates Analysis*

The future year forecasts for airline peaks are based on carrying forward the relevant ratios determined for the 2022 base year. The peak month for enplanements was 9.72 percent of annual enplanements which was carried forward to the plan years. The 2022 design day for enplanements was 5.40 percent of the peak month and was carried forward to the plan years. The design hour for enplanements was 34.32 percent of the design day, which was carried forward to the plan years. Design hour for deplanements was 46.03 percent of total deplanements.

Total passenger peaks provide an idea of the average busiest times at the airport. The peak month is the absolute peak month for the year. The design day is twice the enplanement design day level. The design hour is twice the enplanement design hour. The total passenger design hour is 426 which is the combined total of the design hour enplanements(182) and deplanements (244).

The visitor peak is an important consideration because many people will either enter the terminal building with the departing passenger or enter the building to pick up arriving passengers. It is critical to account for these visitors and their usage of the non-secure public spaces. To account for visitors, a visitor peak ratio (58 percent) is applied to the total design hour enplanements and deplanements.

## TOP 4 BUSY DAYS

| | | | AM | | | | | | PM | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Nov 4 & 7** | **Arrival/ Departure** | **Max Seats** | **6-7** | **7-8** | **8-9** | **9-10** | **10-11** | **11-12** | **12-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-6** | **6-7** | **7-8** |
| United (SFO) | Arrival | 50/70 | - | - | - | - | - | - | - | 1:48 | - | - | - | - | 7:42 | - |
| United (SFO) | Departure | 50/70 | 6:28 | - | - | - | - | - | - | - | 2:23 | - | - | - | - | - |
| United (LAX) | Arrival | 50 | - | - | - | - | - | - | - | - | 2:50 | - | - | - | - | - |
| United (LAX) | Departure | 50 | - | - | - | - | - | - | - | - | - | 3:40 | - | - | - | - |
| Alaska (SEA) | Arrival | 76 | - | - | - | - | - | - | - | - | - | - | - | - | 7:48 | - |
| Alaska (SEA) | Departure | 76 | - | 7:18 | - | - | - | - | - | - | - | - | - | - | | - |
| Avelo (LAS) | Arrival | 189 | - | - | - | - | - | - | - | - | - | - | - | - | 6:55 | - |
| Avelo (LAS) | Departure | 189 | - | - | - | 9:15 | - | - | - | - | - | - | - | - | - | - |
| Avelo (BUR) | Arrival | 189 | - | - | 8:35 | - | - | - | - | - | - | - | - | - | - | - |
| Avelo (BUR) | Departure | 189 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7:35 |
| Total Seats | | | 70 | 76 | 189 | 189 | - | - | - | 50 | 100 | 50 | - | - | 335 | 189 |
| Total Seats Within 1 hour | | | - | 146 | 189 | 378 | - | - | - | - | 150 | 100 | - | - | 335 | 524 |
| Total Arrival Seats | | | - | - | 189 | - | - | - | - | 50 | 50 | - | - | - | 335 | - |
| Arrival Seats Within 1 hour | | | - | - | 189 | - | - | - | - | - | 100 | - | - | - | 335 | - |
| Total Departure Seats | | | 70 | 76 | - | 189 | - | - | - | - | 50 | 50 | - | - | - | 189 |
| Departure Seats Within 1 hour | | | - | 146 | - | 189 | - | - | - | - | 50 | 50 | - | - | - | 189 |

| | | | AM | | | | | | PM | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Nov 10 & 13** | **Arrival/ Departure** | **Max Seats** | **6-7** | **7-8** | **8-9** | **9-10** | **10-11** | **11-12** | **12-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-6** | **6-7** | **7-8** |
| United (SFO) | Arrival | 50/70 | - | - | - | - | - | - | - | 1:48 | | - | - | - | - | 7:42 |
| United (SFO) | Departure | 50/70 | 6:28 | - | - | - | - | - | - | - | 2:23 | - | - | - | - | - |
| United (LAX) | Arrival | 50 | - | - | - | - | - | - | - | - | 2:50 | - | - | - | - | - |
| United (LAX) | Departure | 50 | - | - | - | - | - | - | - | - | - | 3:40 | - | - | - | - |
| Alaska (SEA) | Arrival | 76 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7:48 |
| Alaska (SEA) | Departure | 76 | - | 7:18 | - | - | - | - | - | - | - | - | - | - | - | - |
| Avelo (LAS) | Arrival | 189 | - | - | - | - | - | - | - | 1:10 | - | - | - | - | - | - |
| Avelo (LAS) | Departure | 189 | - | - | | 9:15 | - | - | - | - | - | - | - | - | - | - |
| Avelo (BUR) | Arrival | 189 | - | - | 8:35 | - | - | - | - | - | - | - | - | - | - | - |
| Avelo (BUR) | Departure | 189 | - | - | - | - | - | - | - | 1:50 | - | - | - | - | - | - |
| Total Seats | | | 70 | 76 | 189 | 189 | - | - | - | 428 | 100 | 50 | - | - | - | 146 |
| Total Seats Within 1 hour | | | - | 146 | - | 378 | - | - | - | 428 | 339 | 100 | - | - | - | 146 |
| Total Arrival Seats | | | - | - | 189 | | - | - | - | 239 | 50 | - | - | - | - | 146 |
| Total Arrival Seats Within 1 hour | | | - | - | 189 | - | - | - | - | 239 | 289 | - | - | - | - | - |
| Total Departure Seats | | | 70 | 76 | - | 189 | - | - | - | 189 | 50 | 50 | - | - | - | - |
| Total Departure seats Within 1 hour | | | - | - | 126 | - | 189 | - | - | - | 239 | 50 | - | - | - | - |

## NOVEMBER 2022 TOTAL SCHEDULED SEATS

| Day | Day of Week | Enplaned Seats (Departures) | Deplaned Seats (Arrivals) | Total Seats |
|---|---|---|---|---|
| 1 | Tue | 246 | 246 | 492 |
| 2 | W | 246 | 246 | 492 |
| 3 | Th | 246 | 246 | 492 |
| 4 | Fr | ***624*** | ***624*** | ***1,248*** |
| 5 | Sat | 246 | 246 | 492 |
| 6 | Sun | 246 | 246 | 492 |
| 7 | Mon | ***624*** | ***624*** | ***1,248*** |
| 8 | Tue | 246 | 246 | 492 |
| 9 | W | 246 | 246 | 492 |
| 10 | Th | ***624*** | ***624*** | ***1,248*** |
| 11 | Fr | 246 | 246 | 492 |
| 12 | Sat | 246 | 246 | 492 |
| 13 | Sun | ***624*** | ***624*** | ***1,248*** |
| 14 | Mon | 246 | 246 | 492 |
| 15 | Tue | 246 | 246 | 492 |
| 16 | W | 246 | 246 | 492 |
| 17 | Th | ***624*** | 548 | 1,172 |
| 18 | Fr | 246 | 246 | 492 |
| 19 | Sat | 246 | 246 | 492 |
| 20 | Sun | ***624*** | ***624*** | ***1,248*** |
| 21 | Mon | 246 | 246 | 492 |
| 22 | Tue | 246 | 246 | 492 |
| 23 | W | 246 | 246 | 492 |
| 24 | Th | 478 | 478 | 956 |
| 25 | Fr | 246 | 246 | 492 |
| 26 | Sat | 246 | 246 | 492 |
| 27 | Sun | ***624*** | ***624*** | ***1,248*** |
| 28 | Mon | 246 | 246 | 492 |
| 29 | Tue | 246 | 246 | 492 |
| 30 | W | 246 | 246 | 492 |
| **TOTAL** | | **10,258** | **10,182** | **20,440** |

Note: Numbers in ***BOLD italic*** are the peak days.

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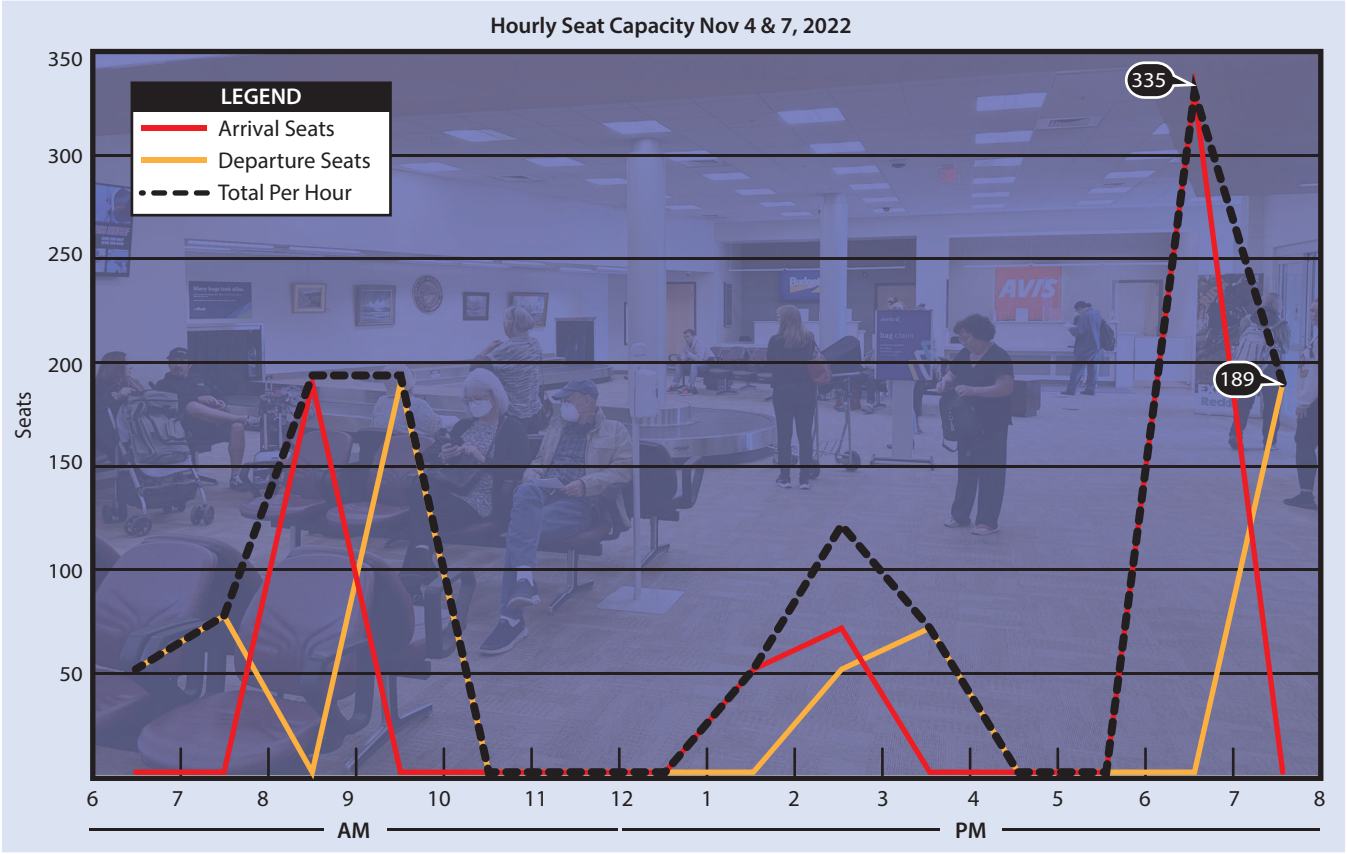
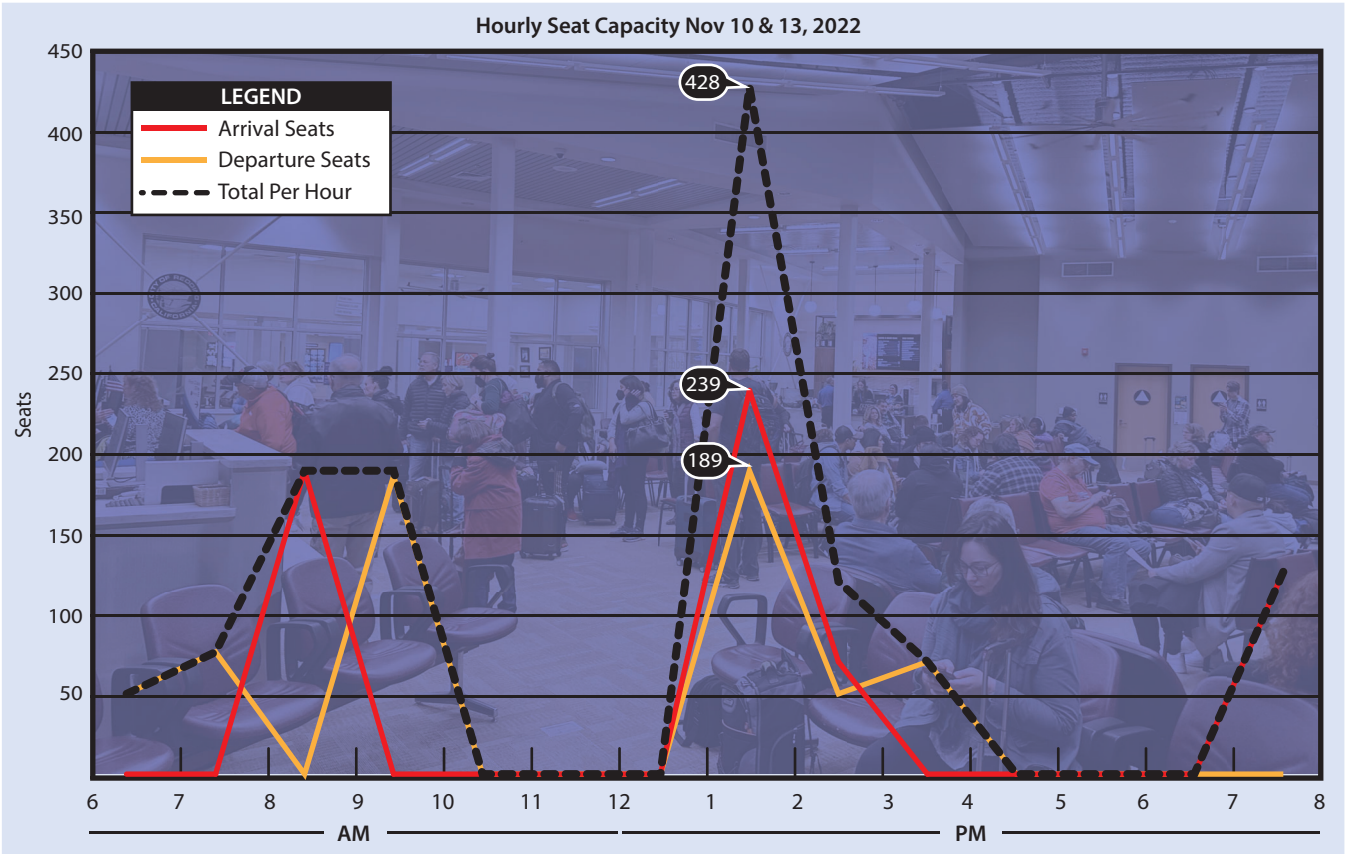

Hourly Seat Capacity Nov 4 & 7, 2022
LEGEND
Arrival Seats
Departure Seats
Total Per Hour
Seats
350
300
250
200
150
100
50
335
189
6
7
8
9
10
11
12
1
2
3
4
5
6
7
8
AM
PM


Hourly Seat Capacity Nov 10 & 13, 2022
LEGEND
Arrival Seats
Departure Seats
Total Per Hour
Seats
450
400
350
300
250
200
150
100
50
428
239
189
6
7
8
9
10
11
12
1
2
3
4
5
6
7
8
AM
PM

The peaking characteristics for airline operations are also presented. Total and peak month airline operations are based on the 2022 actual landings (multiplied by 2) as tracked by the airport.

## *AIR CARGO FORECASTS*

Air cargo includes air freight/express and mail. Air freight and express is handled by both passenger airlines and all-cargo airlines. Air mail is now primarily handled by an all-cargo carrier under contract with the United States Postal Service. The demand for air cargo is a derived demand resulting from economic activity.

The FAA forecasts revenue ton miles (RTMs) which is a measure of how much revenue a company makes per volume of freight transported, which translates to the revenue earned for transporting one ton of freight across one mile. The FAA makes available a pool of capital development funding to those airports with a minimum landed weight of 100 million pounds (50,000 tons) of air cargo.

Redding Regional Airport has air cargo activity. There are two primary air cargo/freight service providers at the airport. West Air is contracted with FedEx, and they utilize the Cessna Caravan 208B aircraft. Redding Aero (owned by the Redding Jet Center) contracts with UPS. Redding Aero utilizes the Cessna Caravan 208B, Cessna 402, and Cessna 404 aircraft. Over the last five years, these cargo carriers have combined to average 2,235 annual operations and 2.8 million pounds of cargo (enplaned and deplaned). Exhibit 1C from the inventory chapter, showed the historical air cargo activity at RDD.

**Table 2V** presents the forecast for RDD air cargo. The forecast utilizes the FAAs national forecast for domestic RTM as a point of comparison. A forecast of air cargo activity has been developed by reflecting an increasing market share of U.S. RTM's back to average levels (0.0085 percent) over the 20-year forecast period. Air cargo feeder service is expected to continue through the 20-year planning horizon.

**TABLE 2V | Air Cargo Forecast**

| Year | RDD Air Cargo Total (lbs.)[1] | RDD Air Cargo Total (Tons) | U.S. Domestic Revenue Ton-Miles[2] | RDD Market Share |
|---|---|---|---|---|
| 2018 | 2,554,505 | 1,277 | 15,761,000 | 0.00810% |
| 2019 | 2,706,638 | 1,353 | 16,205,000 | 0.00835% |
| 2020 | 2,941,045 | 1,471 | 17,787,000 | 0.00827% |
| 2021 | 3,117,746 | 1,559 | 19,875,000 | 0.00784% |
| 2022 | 2,643,117[3] | 1,322 | 20,830,000 | 0.00634% |
| **Increasing Market Share - Selected Forecast (CAGR = 3.95%)** | | | | |
| 2027 | 3,361,260 | 1,681 | 24,009,000 | 0.00700% |
| 2032 | 4,057,350 | 2,029 | 27,049,000 | 0.00750% |
| 2042 | 5,737,840 | 2,869 | 33,752,000 | 0.00850% |

*[1]Airport records (enplaned and deplaned)*
*[2]FAA Aerospace Forecasts Fiscal Years 2022-2042.*
*[3]October 2022 - September 2023*

Air cargo operations are forecast separately, although they are officially classified as air taxi. Based on airport landing report records that were cross-checked with flight plan data obtained from GRC, Inc., there were approximately 2,235 air cargo operations in 2022. This calculated to 1,183 pounds of cargo per air cargo operation. By carrying this value forward to the plan years, the forecast results in 4,565 air cargo operations by 2042. **Table 2W** outlines this analysis.

**TABLE 2W | Air Cargo Operations Estimate**

| Year | RDD Air Cargo Total (lbs.) | Pounds per Operation | Air Cargo Operations |
|---|---|---|---|
| 2022 | 2,643,117 | 1,183 | 2,235 |
| 2027 | 3,361,260 | 1,183 | 2,841 |
| 2032 | 4,057,350 | 1,183 | 3,430 |
| 2042 | 5,737,840 | 1,183 | 4,850 |

*Source: Coffman Associates analysis*

## *GENERAL AVIATION FORECASTS*

General aviation encompasses all portions of civil aviation except commercial service and military operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity at RDD, certain elements of this activity must be forecast. These indicators of general aviation demand include based aircraft, aircraft fleet mix, and annual operations.

### BASED AIRCRAFT FORECAST

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft for the airport, other demand indicators can be projected. The process of developing forecasts of based aircraft begins with an analysis of aircraft ownership in the primary general aviation service area through a review of historical aircraft registrations.

#### Registered Aircraft Projections

Aircraft ownership trends for the primary service area will influence the based aircraft trends for an airport. For general aviation activity, the primary service area is Shasta County. In 2022, there were 334 aircraft registered in Shasta County as shown on **Table 2Y**. Not all aircraft registered in one county will be based at an airport in that county. Typically, the number of aircraft registered in a particular county that are based at a more distant airport will balance out with the number of aircraft owners who registered their aircraft elsewhere but base their aircraft at a subject airport.

In the recent past there have been as many as 400 aircraft registered in Shasta County. In 2022, there were 334 registered aircraft in the county. With 240 aircraft currently based at the airport, approximately 72 percent of county aircraft registrations are based at RDD (in aggregate). By developing a registered aircraft forecast, that data can then be utilized as an input to the based aircraft projection models.

**TABLE 2Y | Historical Shasta County Aircraft Registrations**

| Year | Single Engine Piston[1] | Multi-Engine Piston | Turboprop | Jet | Helicopter | Total |
|---|---|---|---|---|---|---|
| 2010 | 308 | 30 | 8 | 5 | 17 | 368 |
| 2011 | 316 | 28 | 8 | 5 | 16 | 373 |
| 2012 | 333 | 34 | 9 | 5 | 19 | 400 |
| 2013 | 297 | 28 | 8 | 8 | 14 | 355 |
| 2014 | 290 | 28 | 9 | 9 | 10 | 346 |
| 2015 | 290 | 29 | 10 | 7 | 12 | 348 |
| 2016 | 296 | 31 | 12 | 7 | 14 | 360 |
| 2017 | 300 | 29 | 17 | 7 | 16 | 369 |
| 2018 | 279 | 25 | 19 | 7 | 14 | 344 |
| 2019 | 274 | 20 | 21 | 6 | 17 | 338 |
| 2020 | 276 | 18 | 21 | 6 | 18 | 339 |
| 2021 | 275 | 17 | 17 | 8 | 19 | 336 |
| 2022 | 274 | 14 | 19 | 10 | 17 | 334 |

[1] Includes gliders, balloons, ultralights, kit planes, UAV

*Source: FAA Aircraft Registration Database*

**Table 2Z** shows four different registered aircraft forecasts for Shasta County. Each considered the relationship to either the FAA forecast of the total number of general aviation aircraft or to the county population. The table is also set up to be able to compare each variable (general aviation fleet and population) for reasonableness.

The first considers the statewide TAF which projects that based aircraft will grow 0.83 percent annually. By applying this growth rate to the current number of registered aircraft in the county a forecast emerges which results in 394 registered aircraft by 2042. This forecast would be the second highest number of registered aircraft in the county over the last 20+ years. The highest was 400 in 2012. This forecast will be examined in comparison to several others.

The second registered aircraft forecast considers national trends in the general aviation fleet. Over the last 10 years, the number of registered aircraft in the county has averaged 0.1669 percent of the national fleet. By progressively increasing the current market share of the national fleet to ultimately reaching the average, a forecast emerges. This forecast results in 349 registered aircraft by 2042. This appears to be a low-range forecast as only 15 new registered aircraft result.

The third forecast considers the relationship of county population to registered aircraft. In 2022, there was 1.8241 based aircraft for every 1,000 people in the county. By maintaining this ratio through the plan years, a forecast results in which there are 362 registered aircraft by 2042.

The fourth forecast also considers the relationship of registered aircraft to population; however, this one considers an increasing ratio that ultimately is equal to the highpoint of the last 10 years. In 2017, there were 2.0341 registered aircraft per 1,000 people in the county. By setting this ratio as the long-term forecast, the short and intermediate forecasts can also be established. This forecast results in 403 registered aircraft by 2042.

**TABLE 2Z | Registered Aircraft Forecasts (Shasta County)**

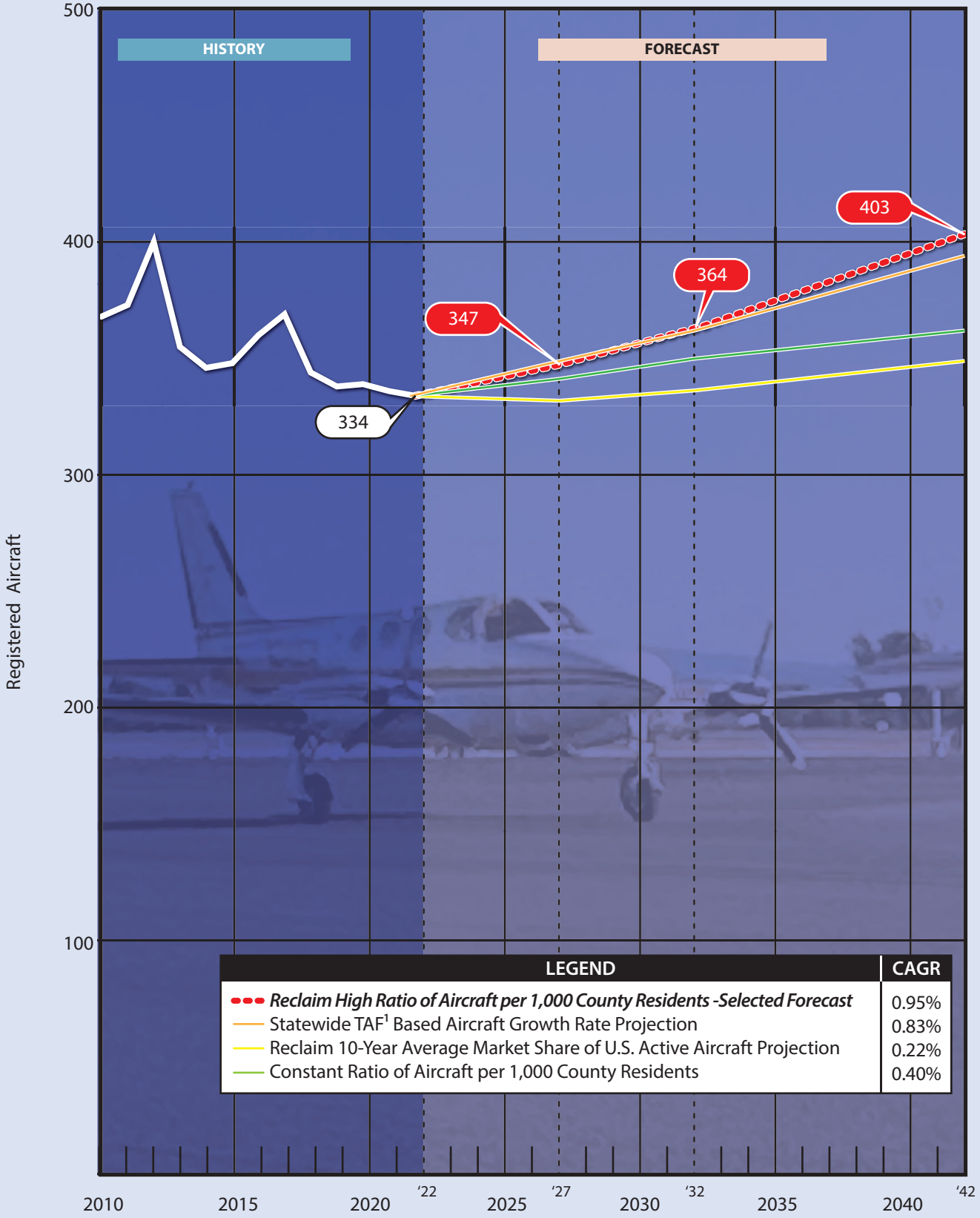
| Year | County Aircraft Registrations[1] | U.S. Active Aircraft[2] | Market Share of U.S. Active | County Population[3] | Aircraft Per 1,000 Residents |
|---|---|---|---|---|---|
| 2013 | 355 | 199,927 | 0.1776% | 179,307 | 1.9798 |
| 2014 | 346 | 204,408 | 0.1693% | 180,050 | 1.9217 |
| 2015 | 348 | 210,031 | 0.1657% | 179,819 | 1.9353 |
| 2016 | 360 | 211,794 | 0.1700% | 180,312 | 1.9965 |
| 2017 | 369 | 211,757 | 0.1743% | 181,409 | 2.0341 |
| 2018 | 344 | 211,749 | 0.1625% | 181,959 | 1.8905 |
| 2019 | 338 | 210,981 | 0.1602% | 182,224 | 1.8549 |
| 2020 | 339 | 204,140 | 0.1661% | 181,893 | 1.8637 |
| 2021 | 336 | 204,405 | 0.1644% | 182,139 | 1.8447 |
| 2022 | 334 | 204,590 | 0.1633% | 183,102 | 1.8241 |
| **Statewide TAF[4] Based Aircraft Growth Rate Projection (CAGR = 0.83%)** | | | | | |
| 2027 | 348 | 204,925 | 0.1698% | 187,617 | 1.8548 |
| 2032 | 363 | 205,195 | 0.1769% | 191,699 | 1.8936 |
| 2042 | 394 | 208,905 | 0.1886% | 198,259 | 1.9873 |
| **Reclaim 10-Year Average Market Share of U.S. Active Aircraft Projection (CAGR = 0.22%)** | | | | | |
| 2027 | 332 | 204,925 | 0.1620% | 187,617 | 1.7694 |
| 2032 | 337 | 205,195 | 0.1640% | 191,699 | 1.7555 |
| 2042 | 349 | 208,905 | 0.1669% | 198,259 | 1.7586 |
| **Constant Ratio of Aircraft per 1,000 County Residents (CAGR = 0.40%)** | | | | | |
| 2027 | 342 | 204,925 | 0.1670% | 187,617 | 1.8241 |
| 2032 | 350 | 205,195 | 0.1704% | 191,699 | 1.8241 |
| 2042 | 362 | 208,905 | 0.1731% | 198,259 | 1.8241 |
| ***Reclaim High Ratio of Aircraft per 1,000 County Residents (CAGR = 0.95%) - Selected Forecast*** | | | | | |
| 2027 | 347 | 204,925 | 0.1694% | 187,617 | 1.8500 |
| 2032 | 364 | 205,195 | 0.1775% | 191,699 | 1.9000 |
| 2042 | 403 | 208,905 | 0.1930% | 198,259 | 2.0341 |

CAGR = Compound annual growth rate
[1] County Aircraft Registrations from FAA Aircraft Registration Database
[2] U.S. Active Aircraft from FAA Aerospace Forecasts – Fiscal Years 2022-2042
[3] Woods & Poole - Complete Economic and Demographic Data Source (CEDDS)
[4] TAF published in February 2023

### Selected Registered Aircraft Forecast

While each of the forecasts appears reasonable, and any one of the four could be reasonably used as the selected forecast, it is the opinion of the forecast analyst that the fourth forecast is best for planning purposes. The fourth forecast primarily considers the impact of population growth in the county. Under this forecast, registered aircraft are projected to reach 403 by 2042 for an annual growth rate of 0.95 percent.

An additional consideration was examined to establish the reasonableness of the selected forecast. Shasta County also has Benton Airpark to serve general aviation activity. A forecast was approved by the FAA for Benton Airpark in 2022, in which the registered aircraft forecast was projected at 400 by 2041. Therefore, the selected registered aircraft forecast for this study is consistent with that FAA-approved forecast. **Exhibit 2F** graphically depicts the Shasta County registered aircraft forecasts and the selected forecast that will be used as a data input to the based aircraft forecast.




CAGR: Compound Annual Growth Rate
[1] TAF published in Feb. 2023

### Based Aircraft Forecasts

Several forecasts of based aircraft tied to the 20-year planning horizon of this study have been developed. The first forecast utilizes the previously generated service area registered aircraft forecast as the key input. In 2022, RDD had approximately 72 percent of the aircraft registered in the service area based at the airport. By maintaining this ratio through the planning period, a long-term forecast of based aircraft results as shown on **Table 2AA**. This results in based aircraft growing from 240 in 2022 to 290 by 2042 for an annual growth rate of 0.95 percent.

**TABLE 2AA | Based Aircraft Market Share of Registered Aircraft**

| Year | Service Area Registered Aircraft | Percent of Registered | Aircraft Based at RDD |
|---|---|---|---|
| 2022 | 334 | 71.86% | 240 |
| **Constant Market Share (CAGR = 0.95%)** | | | |
| 2027 | 347 | 71.86% | 249 |
| 2032 | 364 | 71.86% | 262 |
| 2042 | 403 | 71.86% | 290 |
| CAGR = Compound annual growth rate | | | |

*Source: Coffman Associates analysis*

Next, three forecasts have been developed based on the growth rates of existing based aircraft forecasts. The first considers the 2022 TAF (published in February 2023) for the airport which has an annual growth rate of 1.82 percent. By applying this growth rate to the current base year of 240 based aircraft, a 2042 projection of 344 based aircraft results. This based aircraft forecast is documented in **Table 2BB**. The table also shows two more forecasts of based aircraft using the same methodology. The statewide TAF has an annual growth rate of 0.83 percent, and the 2015 master plan had a based aircraft growth rate of 1.05 percent.

**TABLE 2BB | Based Aircraft Growth Rate Forecasts**

| Year | 2022 Airport TAF[1] | 2022 Statewide TAF[1] | 2015 Master Plan |
|---|---|---|---|
| 2022 | 240 | 240 | 240 |
| **FORECAST** | | | |
| 2027 | 263 | 250 | 253 |
| 2032 | 288 | 261 | 267 |
| 2042 | 344 | 283 | 296 |
| **CAGR** | **1.82%** | **0.83%** | **1.05%** |

CAGR = Compound annual growth rate
[1] TAF published in February 2023

Two additional forecasts have been developed which are a function of population and employment in Shasta County. These forecasts are presented in **Table 2CC**. The first considers that in 2022, there were 1.3107 based aircraft per 1,000 people. When maintaining this ratio as a constant, a long-term projection of 260 based aircraft results. In 2022, there were 2.5669 based aircraft per 1,000 employed people in the county. Again, by maintaining this ratio as a constant a long-term forecast of 271 based aircraft emerges.

**TABLE 2CC | Based Aircraft Forecast as a Constant Share of Population**

| Year | Shasta County Population | Based Aircraft per 1,000 People | Based Aircraft at RDD | Shasta County Employment | Based Aircraft per 1,000 Employed | Based Aircraft at RDD |
|---|---|---|---|---|---|---|
| 2022 | 183,102 | 1.3107 | 240 | 93,499 | 2.5669 | 240 |
| FORECAST | | | | | | |
| 2027 | 187,617 | 1.3107 | 246 | 97,732 | 2.5669 | 251 |
| 2032 | 191,699 | 1.3107 | 251 | 100,653 | 2.5669 | 258 |
| 2042 | 198,259 | 1.3107 | 260 | 105,598 | 2.5669 | 271 |
| CAGR 2022-2042 | | | 0.40% | CAGR 2022-2042 | | 0.61% |

*Source: Coffman Associates analysis*

Six separate based aircraft forecasts have been developed for consideration. The two forecasts that consider the relationship to population and employment (**Table 2CC**) appear low, with the addition of only 20 and 31 respectively over the 20-year planning horizon. These two are not considered further.

The airport TAF growth rate forecast of 1.82 percent annually appears aggressive as there are no other comparable aviation demand indicators that would indicate such a strong growth rate. This forecast is also not considered further.

The remaining three forecasts appear reasonable. To narrow the choice, an examination of the two-airport system (Benton and RDD) was undertaken. As noted, the FAA approved forecasts for Benton Airpark in 2022. The base year of that forecast was 2021. Therefore, the Benton based aircraft forecast was interpolated and extrapolated to the plan years of this forecast as shown in **Table 2DD**. When the year 2022 based aircraft figures for Benton (81) and RDD (240) are combined they represent 95.81 percent of the registered aircraft in Shasta County. Each of the three forecasts were examined as a system to include Benton and then compared to the registered aircraft forecast.

**TABLE 2DD | Based Aircraft Selected Forecast Through System Analysis**

| Year | Benton Forecast[1] | County Registered Aircraft | RDD Share of Registered* | System % | 2022 Airport TAF[2] | System % | 2022 State TAF[2] | System % | 2015 MP | System % |
|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | 81 | 334 | 240 | 95.81% | 240 | 95.81% | 240 | 95.81% | 240 | 95.81% |
| FORECAST | | | | | | | | | | |
| 2027 | 85 | 347 | 249 | 96.35% | 262 | 99.97% | 250 | 96.52% | 253 | 97.38% |
| 2032 | 88 | 364 | 262 | 96.02% | 287 | 102.96% | 260 | 95.54% | 267 | 97.47% |
| 2042 | 96 | 403 | 290 | 95.66% | 342 | 108.61% | 281 | 93.48% | 296 | 97.20% |

[1] 2022 Benton Airpark forecast interpolated and extrapolated to plan years.
[2] TAF published Feb. 2023
*Selected Based Aircraft Forecast

The forecast for RDD based aircraft using the 2022 airport TAF growth rate of 1.82 percent, when examined as part of the two-airport system resulted in more than 108 percent of total aircraft forecast to be registered in the county. While this is possible (higher number of based aircraft registered outside of Shasta County), it is not consistent with history. The others are reasonable; however, it is the forecast that considers maintaining RDD's share of registered aircraft that is the most consistent and is the selected based aircraft forecast.

The following is the recommended based aircraft forecast to be carried through for planning purposes of this master plan:

- 2022 – 240 based aircraft
- 2027 – 249 based aircraft
- 2032 – 262 based aircraft
- 2042 – 290 based aircraft

**Exhibit 2G** graphically presents the planning envelope created by the multiple based aircraft forecasts developed and the selected forecast.

## BASED AIRCRAFT FLEET MIX

The fleet mix of based aircraft is oftentimes more important to airport planning and design than the total number of aircraft. For example, the presence of one or a few large business jets can impact design standards for the runway and taxiway system more than a large number of smaller single engine piston-powered aircraft.

The based aircraft fleet mix forecast for RDD is presented in **Table 2EE**. It has been developed based on local aircraft type usage and national trends as presented in FAA *Aerospace Forecasts - Fiscal Years 2022-2042*. The FAA expects business jets will continue to be the fastest growing general aviation aircraft type in the future. RDD is well positioned to accommodate more business jets; nevertheless, smaller piston-powered aircraft will continue to have a significant presence.

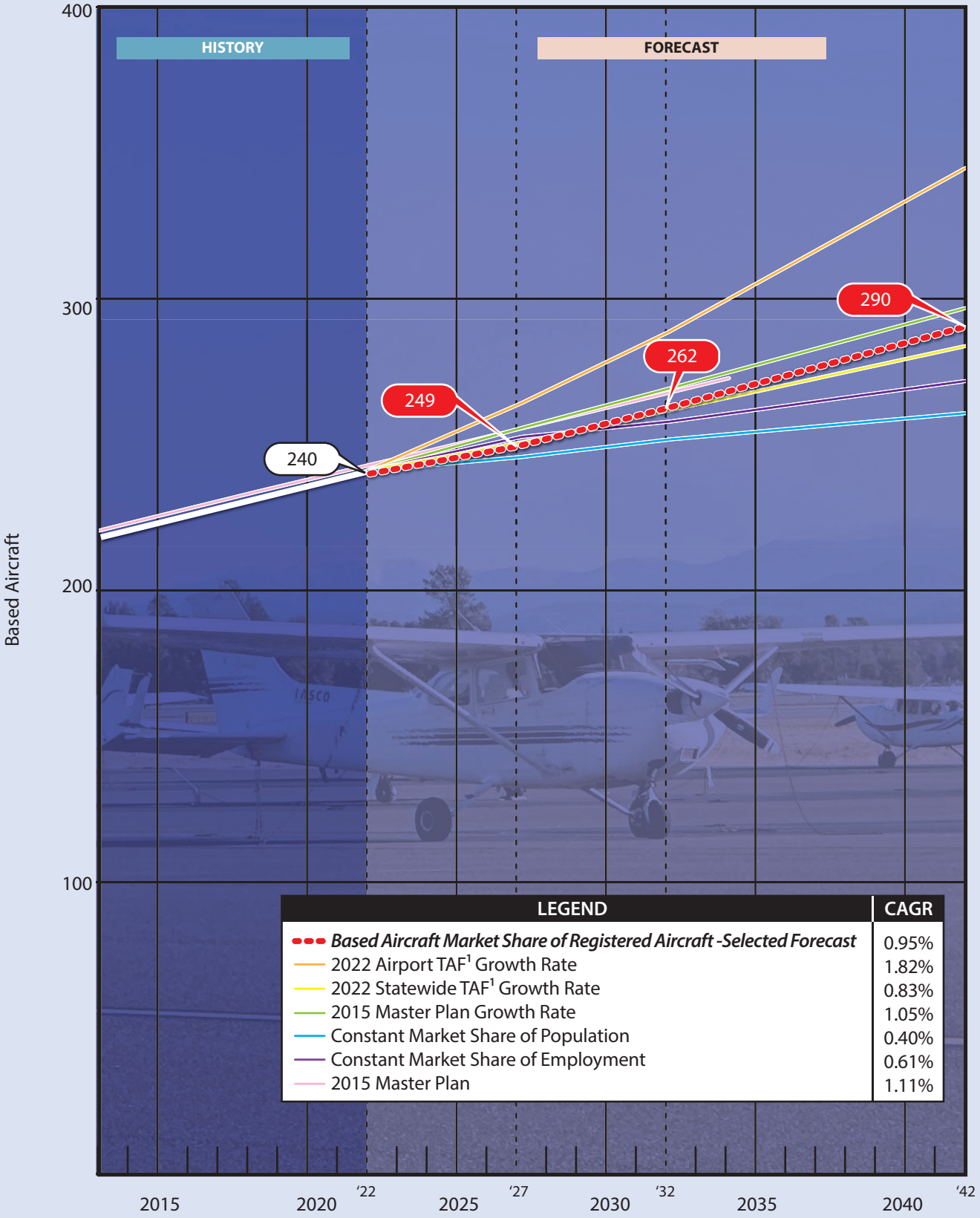
**TABLE 2EE | Based Aircraft Fleet Mix**

| | EXISTING | | FORECAST | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Aircraft Type** | **2022** | **%** | **2027** | **%** | **2032** | **%** | **2042** | **%** |
| Single Engine Piston | 175 | 72.92% | 176 | 70.68% | 182 | 69.47% | 197 | 67.93% |
| Multi-Engine Piston | 15 | 6.25% | 14 | 5.62% | 13 | 4.96% | 11 | 3.79% |
| Turboprop | 19 | 7.92% | 23 | 9.24% | 25 | 9.54% | 29 | 10.00% |
| Jet | 12 | 5.00% | 15 | 6.02% | 18 | 6.87% | 25 | 8.62% |
| Helicopter | 19 | 7.92% | 21 | 8.43% | 24 | 9.16% | 28 | 9.66% |
| **Totals** | **240** | **100.00%** | **249** | **100.00%** | **262** | **100.00%** | **290** | **100.00%** |

*Source: Airport Records; Coffman Associates Analysis*

## GENERAL AVIATION OPERATIONS

General aviation operations include a wide range of activities from recreational use to business and corporate uses. General aviation (GA) operations are classified by the airport traffic control tower (ATCT) as either local or itinerant. A local operation is a takeoff or landing performed by an aircraft that operates within sight of an airport, or which executes simulated approaches or touch-and-go operations at an airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from an airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use since business aircraft are operated at a higher frequency.




CAGR: Compound Annual Growth Rate
[1] TAF published in Feb. 2023

Redding Regional Airport has an airport traffic control tower. Tower personnel count operations and distinguish between air carrier, air taxi/commuter, general aviation, and military. Historical general aviation operations numbers were previously presented on Exhibit 1D and are summarized in **Table 2FF**.

**TABLE 2FF | Historical General Aviation Operations**

| Year | Itinerant | % of Total | Local | % of total | Total | Percent Change +/- |
|---|---|---|---|---|---|---|
| 2010 | 19,574 | 34.4% | 37,324 | 65.6% | 56,898 | NA |
| 2011 | 18,468 | 27.8% | 47,939 | 72.2% | 66,407 | 16.71% |
| 2012 | 20,370 | 31.9% | 43,481 | 68.1% | 63,851 | -3.85% |
| 2013 | 19,346 | 30.2% | 44,695 | 69.8% | 64,041 | 0.30% |
| 2014 | 20,845 | 32.4% | 43,420 | 67.6% | 64,265 | 0.35% |
| 2015 | 20,152 | 48.8% | 21,182 | 51.2% | 41,334 | -35.68% |
| 2016 | 16,771 | 41.6% | 23,508 | 58.4% | 40,279 | -2.55% |
| 2017 | 19,215 | 29.9% | 44,984 | 70.1% | 64,199 | 59.39% |
| 2018 | 19,736 | 47.8% | 21,556 | 52.2% | 41,292 | -35.68% |
| 2019 | 19,623 | 39.7% | 29,857 | 60.3% | 49,480 | 19.83% |
| 2020 | 19,014 | 49.4% | 19,443 | 50.6% | 38,457 | -22.28% |
| 2021 | 20,919 | 75.8% | 6,672 | 24.2% | 27,591 | -28.25% |
| 2022 | 17,100 | 43.8% | 21,951 | 56.2% | 39,051 | 41.54% |

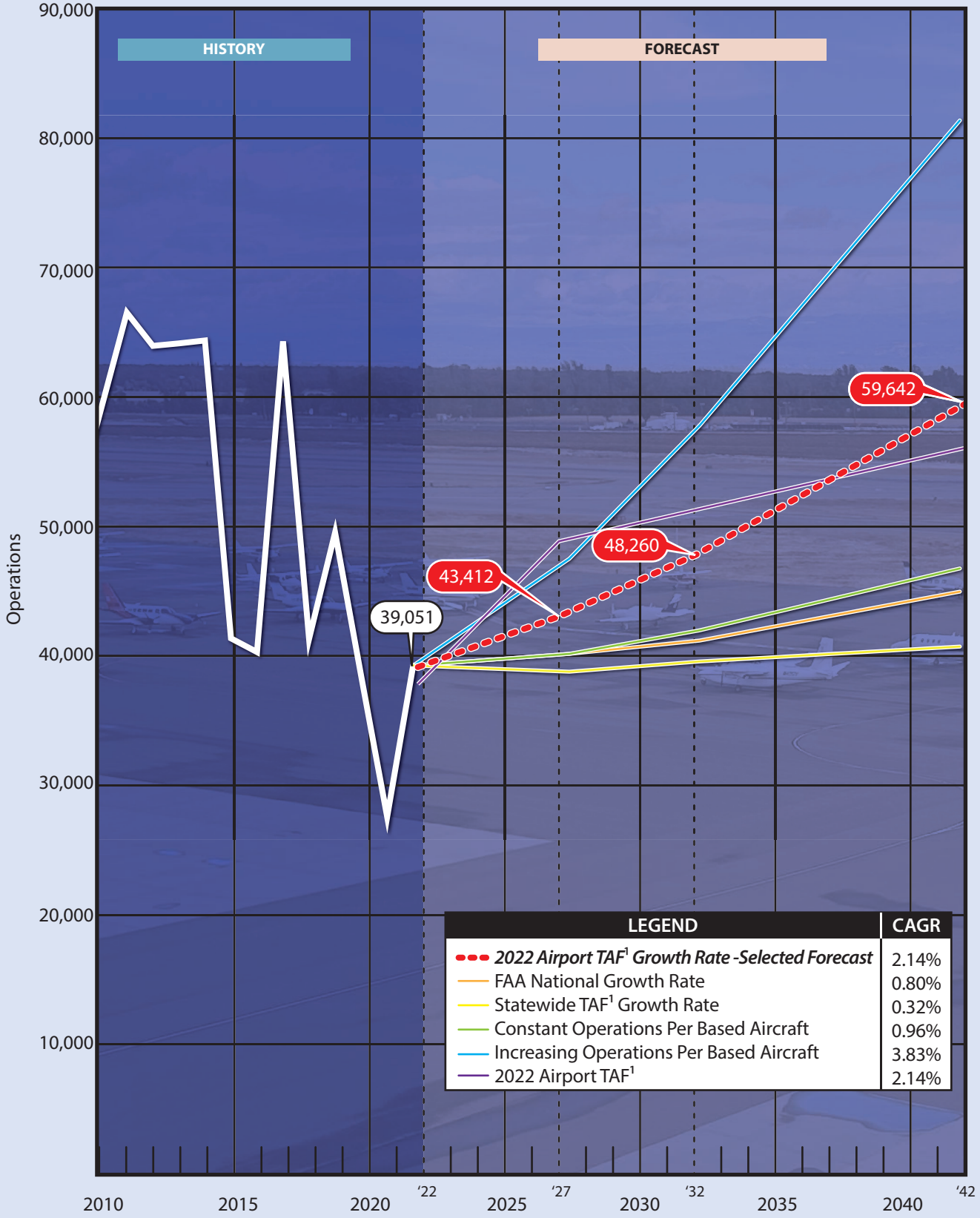
*Source: OPSNET FAA database of RDD tower counts.*

For many years the airport had between 40,000 and 66,000 annual general aviation operations. During the COVID-19 pandemic, general aviation operations declined; however, it appears to be on the upswing, increasing by 42 percent from 2021 to 2022.

**Table 2GG** presents several general aviation operations forecasts as well as the 2022 Airport TAF (published in February 2023). The first forecast applies the annual growth rate reflected in the *FAA Aerospace Forecasts*, which 0.08 percent nationally for general aviation operations. The second forecast applies the statewide TAF growth rate of 0.32 percent. The third forecast employs a common method of calculating the number of operations per based aircraft. In this case there were 163 operations per based aircraft in 2022. By carrying that figure forward a forecast results for the plan years. A second operations per based aircraft forecast was also developed based on the history. In 2013, there were 218 based aircraft and 64,000 operations for 294 operations per based aircraft at the time. This forecast considers operations per based aircraft increasing to 280 per based aircraft by the long-term planning period and a long-term total of 81,200 general aviation operations.

The last forecast utilizes the TAF growth rate of 2.14 percent and applies that to the 2022 base year tower count (which is higher than the TAF). Over the course of the next 20-years it is reasonable to plan for an increase in general aviation operations since RDD has had a significant flight school presence.

The selected forecast is the airport TAF growth rate forecast which results in 59,642 general aviation operations by 2042. The selected forecast appears to appropriately capture the pre-pandemic trend. Nonetheless, it represents recapturing the level most recently achieved in 2017. **Exhibit 2H** graphically shows the general aviation operations planning envelope created by the several forecasts as well as the selected forecast.




CAGR: Compound Annual Growth Rate
[1] TAF published in Feb. 2023

**TABLE 2GG | General Aviation Operations Forecasts**

| Year | 2022 Airport TAF[1] | FAA National Growth Rate[2] | Statewide TAF Growth Rate[3] | Constant Operations Per Based Aircraft[4] | Increasing Operations per Based Aircraft[5] | 2022 Airport TAF Growth Rate[6] Selected |
|---|---|---|---|---|---|---|
| 2022 | 36,823 | 39,051 | 39,051 | 39,051 | 38,310 | 39,051 |
| 2027 | 48,766 | 40,638 | 39,680 | 40,587 | 47,310 | 43,412 |
| 2032 | 51,139 | 42,290 | 40,319 | 42,706 | 57,640 | 48,260 |
| 2042 | 56,239 | 45,798 | 41,628 | 47,270 | 81,200 | 59,642 |
| **CAGR 2022-2042** | **2.14%** | **0.80%** | **0.32%** | **0.96%** | **3.83%** | **2.14%** |

[1] Published February 2023
[2] FAA National GA Operations Growth Rate of 0.80%
[3] State TAF Growth Rate for GA Operations of 0.32%
[4]163 GA Operations Per Based Aircraft
[5]163, 190, 220, 280 Operations per Based Aircraft.
[6]Airport TAF Growth Rate is 2.14%
CAGR: Compound Annual Growth Rate

Historically, approximately 56 percent of general aviation operations have been local in nature and the remaining 44 percent have been itinerant. For purposes of this study, these ratios will be carried forward in regard to future general aviation operations.

### Air Taxi and Military Operations Forecast

Air taxi operations are those with authority to provide "on-demand" transportation of persons or property via aircraft with fewer than 60 passenger seats. Air taxi encompasses a broad range of operations, including some smaller commercial service aircraft, some charter aircraft, air cargo aircraft, many fractional ownership aircraft, forest fire aircraft, and air ambulance services.

Three air taxi forecasts are presented in **Table 2HH**. The 2022 Airport TAF (published in February 2023) has an annual growth rate of 1.91 percent. By applying the TAF growth rate to the actual number of total air taxi operations, a long-range forecast of 30,954 air taxi operations results. The next two forecasts are a function of the FAA national air taxi forecast. The first maintains the RDD 2022 share of national forecasts as a constant through the plan years. This forecast results in an annual growth rate of 0.52 percent and a long-term forecast of 22,014 air taxi operations. The second considers RDD to capture an increasing percentage of national air taxi operations. The increasing share forecast is the selected forecast for planning purposes because it reflects a short-term emergence from pandemic impacts; however, it is not so aggressive as to reach the highs from 2013 when there were more than 35,000 air taxi operations. This is good because the commuter airline operations forecast projects that commercial carriers will ultimately transition to aircraft with more than 60 seats (the air taxi threshold), thus this segment of air taxi operations will be reduced in the future.

**TABLE 2HH | Air Taxi Operations Forecast**

| Year | RDD Total Air Taxi Operations[1] | U.S. ATCT Air Taxi Operations[2] | RDD Percent |
|---|---|---|---|
| 2011 | 34,061 | 9,278,542 | 0.3671% |
| 2012 | 33,506 | 8,994,371 | 0.3725% |
| 2013 | 35,424 | 8,803,402 | 0.4024% |
| 2014 | 34,632 | 8,439,711 | 0.4103% |
| 2015 | 12,338 | 7,895,478 | 0.1563% |
| 2016 | 18,019 | 7,580,119 | 0.2377% |
| 2017 | 30,457 | 7,179,651 | 0.4242% |
| 2018 | 25,736 | 7,125,556 | 0.3612% |
| 2019 | 23,522 | 7,234,239 | 0.3251% |
| 2020 | 24,190 | 5,471,641 | 0.4421% |
| 2021 | 10,803 | 5,882,460 | 0.1836% |
| 2022 | 21,202 | 6,284,713 | 0.3374% |
| **2022 FAA TAF[3] Projection (CAGR = 1.91%)** | | | |
| 2027 | 23,306 | 5,962,583 | 0.3909% |
| 2032 | 25,618 | 6,285,528 | 0.4076% |
| 2042 | 30,954 | 6,966,613 | 0.4443% |
| **Constant Market Share Projection (CAGR = 0.52%)** | | | |
| 2027 | 20,115 | 5,962,583 | 0.3374% |
| 2032 | 21,205 | 6,285,528 | 0.3374% |
| 2042 | 23,502 | 6,966,613 | 0.3374% |
| ***Increasing Market Share Projection (CAGR = 1.86%) - Selected Forecast*** | | | |
| 2027 | 22,658 | 5,962,583 | 0.3800% |
| 2032 | 25,142 | 6,285,528 | 0.4000% |
| 2042 | 30,653 | 6,966,613 | 0.4400% |

[1]Historical data from ATCT records as reported to FAA.
[2]FAA Forecasts 2022-42
[3]2022 TAF published in February 2023
CAGR = Average Annual Growth Rate from 2022 to 2042

*Source: Coffman Associates analysis*

This air taxi forecast includes all operations classified as such by the tower. For planning purposes, it is helpful to understand what portion of the air taxi operations fall within certain focus areas such as air cargo and commuter airline service. It could also be informative to understand the operational numbers for air ambulance and firefighting activity; however, that information is not available. **Table 2JJ** summarizes those other air taxi elements, commuter airline and air cargo, and their projections.

**TABLE 2JJ | Elements of Air Taxi Operations**

| Category | 2022 | 2027 | 2032 | 2042 |
|---|---|---|---|---|
| Total Air Taxi | 21,202 | 22,658 | 25,142 | 30,653 |
| Commuter Airline | 2,044 | 1,123 | 0 | 0 |
| Air Cargo | 2,235 | 2,841 | 3,430 | 4,850 |
| Air Taxi Less Commuter & Cargo | 16,923 | 18,694 | 21,712 | 25,803 |

Military aircraft can and do utilize civilian airports across the country. Redding Regional Airport does on occasion have activity by military aircraft. Forecasts of military activity are inherently difficult because of the national security nature of their operations and the fact that their mission can change on a daily basis. Thus, it is typical for FAA to plug in a flat line number for military operations. At Redding Regional Airport, the FAA TAF has 549 itinerant and 298 local operations annually for each year of the 20-year planning horizon. These estimates for military operations will be carried forward in this master plan.

### Total Operations Forecast Summary

Each operational element has been forecast individually. **Table 2KK** presents a summary of the operations forecast to be utilized in this master plan. These forecasts take into account the impact of the COVID-19 pandemic and the commercial carrier flight schedule (current and projected).

**TABLE 2KK | Total Operations Forecast**

| | ITINERANT OPERATIONS | | | | | LOCAL OPERATIONS | | TOTAL OPERATIONS |
|---|---|---|---|---|---|---|---|---|
| Year | Air Carrier | Commuter/ Air Taxi | Other Air Taxi | GA | MIL | GA | MIL | |
| 2022 | 1,860 | 2,044 | 18,538 | 17,100 | 548 | 21,951 | 345 | 62,387 |
| 2027 | 2,748 | 1,123 | 21,535 | 19,101 | 549 | 24,311 | 298 | 69,665 |
| 2032 | 3,190 | 0 | 25,142 | 21,234 | 549 | 27,026 | 298 | 77,439 |
| 2042 | 2,728 | 0 | 30,653 | 26,242 | 549 | 33,400 | 298 | 93,870 |
| CAGR 2022-2042 | 1.93% | NA | 2.55% | 2.16% | NA | 2.12% | NA | 2.06% |

CAGR = Compound annual growth rate

*Source: Coffman Associates analysis*

## TOTAL OPERATIONS PEAKING FORECAST

Many aspects of facility planning relate to levels of peaking activity – times when an airport is busiest. For example, the appropriate size of terminal facilities can be estimated by determining the number of people that could reasonably be expected to use the facility at a given time. The following planning definitions apply to the peak periods:

- **Peak Month** -- The month within the calendar year when peak aircraft operations occur.
- **Design Day** -- The average day in the peak month.
- **Busy Day** -- The busy day of a typical week in the peak month.
- **Design Hour** – The average peak hour within the design day of a typical week in the peak month.
- **Peak Hour** – The busiest hour during the design day.

*Peak Month:* The peak month is an absolute peak within a given year. In 2022, the peak month was August when there were 7,403 operations which represented 11.9 percent of annual operations. All other peak periods will be exceeded at various times during the year. The peak period forecasts represent reasonable planning standards that can be applied without overbuilding or being too restrictive. The method for forecasting the peak operational parameters was to first determine the peak parameters for the base year of 2022 utilizing control tower records. From this analysis, appropriate factors can be applied to the forecast years.

*Design Day:* The design day was determined by dividing peak month operations by the number of days in the month. August 2022 was the most recent data available in which there were 7,403 operations which when divided by 31 results in a design day of 239 operations.

*Busy Day:* The determination of certain terminal facility needs utilize the busy day calculation. The busy day is not an absolute peak day, it is an average of peak days within each week of the peak month. For this analysis the most recent month available was August 2022. The busy day is established through the following process:

1. Identify the peak days within each seven-day week of the peak month. They are 327, 308, 350, and 360 operations.
2. Identify the 28-day operations total, within the peak month (four complete weeks), which is 6,604. Three days were not used in this analysis as only complete seven-day weeks are used. Total operations for the month were 7,403.
3. The busy day is 20.4 percent of weekly operations. Calculated as the sum of the peak days (1,345) divided by the 28-day total (6,604).
4. A busy day factor is then calculated by multiplying the busy day percent (20.4 percent) by the number of days in the week (seven) which results in a busy day factor of 1.43.
5. The busy day factor is then multiplied by the design day (1.43 x 239 = 340) to arrive at the busy day of 340 operations.

*Design Hour:* The design hour is determined through an examination of the hourly operations of the peak days of the peak month. Hourly operational data for August 2022 was provided by the control tower for this analysis. **Table 2LL** presents the hourly operations total, as counted by the tower, for August 2022. The design hour is calculated by averaging the peak hour of each week of the peak month (47, 49, 57, and 50) which equals 51.

*Peak Hour*: The busiest hour during the design day. The busiest hour had 57 hourly operations. The peak hour accounts for approximately 23.9 percent of the design day operations.

**TABLE 2LL | Design Hour Determination**

| Time | Friday 8.5.22 | Tuesday 8.9.22 | Tuesday 8.16.22 | Wednesday 8.24.22 |
|---|---|---|---|---|
| 6:30-7 am | 18 | 6 | 27 | 18 |
| 7-8 am | ***47*** | 35 | 52 | 44 |
| 8-9 am | 23 | 44 | 40 | 48 |
| 9-10 am | 29 | ***49*** | ***57*** | 21 |
| 10-11 am | 28 | 29 | 47 | ***50*** |
| 11-12 am | 28 | 17 | 20 | 39 |
| 12-1 pm | 20 | 17 | 13 | 29 |
| 1-2 pm | 38 | 23 | 22 | 24 |
| 2-3 pm | 15 | 21 | 23 | 19 |
| 3-4 pm | 22 | 27 | 18 | 26 |
| 4-5 pm | 14 | 9 | 14 | 11 |
| 5-6 pm | 10 | 13 | 2 | 13 |
| 6-7 pm | 20 | 7 | 3 | 5 |
| 7-8 pm | 8 | 6 | 7 | 4 |
| 8-9 pm | 6 | 4 | 4 | 8 |
| 9-9:30 pm | 1 | 1 | 1 | 1 |
| **Total** | **327** | **308** | **350** | **360** |
| **Peak Hour %** | **14.37%** | **15.91%** | **16.29%** | **13.89%** |

**Design Hour is the average of 47, 49, 57, 50, which equals 51.**
Note: Peak Hour is ***BOLD italicized***.

*Source: ATCT hourly operations count for August 2022*

**Table 2MM** summarizes the key peaking operations parameters. A calculation factor was determined for each of the peaking parameters based on 2022 tower operations counts. That factor was then applied to the five-year, 10-year, and 20-year planning horizons. The operational peak month for 2022 is August with 7,403 operations. This represented 11.9 percent of annual operations. The design day is 239 operations which is 3.2 percent of the peak month. The busy day is 340 which was determined to be 143 percent of the design day. The design hour of 51 is 21.4 percent of the design day. The peak hour is the peak hour of the peak month, which was 57 operations which occurred between 9:00 a.m. and 10:00 a.m. on Tuesday August 16, 2022.

**TABLE 2MM | Peak Operations Forecast**

| Peaking Parameter | Factor | 2022 | 2027 | 2032 | 2042 |
|---|---|---|---|---|---|
| Annual Operations | 100% of tower count | 62,387 | 69,665 | 77,439 | 93,870 |
| Peak Month | 11.9% of annual operations | 7,403 | 8,267 | 9,189 | 11,139 |
| Design Day | 3.2% of peak month | 239 | 267 | 296 | 359 |
| Busy Day | 143% of design day | 340 | 381 | 424 | 514 |
| Design Hour | 21.4% of design day | 51 | 57 | 63 | 77 |
| Peak Hour | 23.9% of design day. | 57 | 64 | 71 | 86 |

## OPERATIONS BY FLEET MIX

Developing an understanding of the operational fleet mix including the approximate volume of operations by aircraft type is utilized in airfield capacity analysis, fuel storage capacity analysis, and pavement utilization determination. The approximate number of operations by certain aircraft types is available from the FAA Traffic Flow Management System Count (TFMSC) database. This database captures flight plans filed to and from airports. Not all flights are required to file a flight plan, and therefore this database does not capture all activity; however, the FAA indicates that for turboprops and jets, the capture rate is better than 95 percent. **Table 2NN** presents the historical TFMSC database of operations for jets and turboprops.

**TABLE 2NN | Historical Jet and Turboprop (TP) Operations at RDD**

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Jets | 1,404 | 1,450 | 2,520 | 3,266 | 3,436 | 3,742 | 3,974 | 2,294 | 3,958 | 4,952 |
| TP | 6,658 | 7,220 | 5,316 | 5,228 | 4,832 | 5,110 | 4,934 | 5,426 | 6,500 | 6,554 |
| Total | 8,062 | 8,670 | 7,836 | 8,494 | 8,268 | 8,852 | 8,908 | 7,720 | 10,458 | 11,506 |

*Source: FAA Traffic Flow Management System Count (TFMSC). Data normalized annually.*

By identifying the number of operations by turboprops and jets, it is then possible to deduce an estimate of operations by remaining aircraft types. In addition, experience at other airports has shown that general operational estimates can be made by multiplying the number of based aircraft by utilizations factors. Multi-engine piston aircraft are estimated to account for 200 operations annually. Turboprops are estimated at 350 annually, and helicopters are estimated at 400. Turboprops and helicopters typically have higher utilization rates than piston aircraft. It should be noted that these operational estimates account for all operations by that aircraft type, not just those based at an airport. **Table 2PP** presents the operational fleet mix forecast estimate for the airport.

**TABLE 2PP | Fleet Mix Operations Forecast**

| | 2022 | 2027 | 2032 | 2042 |
|---|---|---|---|---|
| **Local Operations** | | | | |
| Single Engine Piston | 20,896 | 23,059 | 25,624 | 31,648 |
| Multi-Engine Piston | 400 | 350 | 300 | 250 |
| Helicopter | 1,000 | 1,200 | 1,400 | 1,800 |
| **Total Local** | **22,296** | **24,609** | **27,324** | **33,698** |
| **Itinerant Operations** | | | | |
| Single Piston | 19,091 | 19,356 | 21,566 | 26,173 |
| Multi-Piston | 2,600 | 2,450 | 2,300 | 1,950 |
| Turboprop | 6,874 | 8,050 | 8,750 | 10,150 |
| Jet | 4,926 | 8,000 | 9,300 | 12,500 |
| Helicopters | 6,600 | 7,200 | 8,200 | 9,400 |
| **Total Itinerant** | **40,091** | **45,056** | **50,116** | **60,173** |
| **Total Operations** | **62,387** | **69,665** | **77,439** | **93,870** |

*Source: Coffman Associates analysis*

### ANNUAL INSTRUMENT APPROACHES

Forecasts of annual instrument approaches (AIAs) provide guidance in determining an airport's requirements for navigational aid facilities. An instrument approach is defined as "an approach to an airport with intent to land by an aircraft in accordance with an instrument flight rules (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude." Typically, no local operations occur during inclement weather conditions; therefore, the AIA analysis focuses on itinerant operations.

Historical data on instrument approaches (under IFR conditions) at the airport is not readily available. Therefore, an estimate of AIAs is prepared based on experience at similar airports. The number of AIAs was calculated for the planning period by first identifying 50 percent of itinerant operations (arrivals only). Then the traffic flow management system count (TFMSC) date was consulted to determine the total number of arrivals using an instrument approach procedure (6,369). Then 10 percent of the total instrument approaches are estimated to have occurred in IFR conditions. The AIA projections are presented in **Table 2QQ.**

**TABLE 2QQ | Annual Instrument Approach (AIA) Forecast**

| | 2022 | 2027 | 2032 | 2042 |
|---|---|---|---|---|
| Total Itinerant Operations | 40,091 | 45,056 | 50,116 | 60,173 |
| Half Total Itinerant Operations | 20,046 | 22,528 | 25,058 | 30,086 |
| Total Instrument Approaches[1] | 6,369 | 7,158 | 7,961 | 9,559 |
| AIAs (10%) | 637 | 716 | 796 | 956 |
| *[1]2022 from Traffic Flow Management System Count (TFMSC)* | | | | |

## *FORECAST SUMMARY*

This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period. **Exhibit 2J** presents a summary of the aviation demand forecasts prepared in this chapter. The base year for these forecasts is 2022 with a 20-year planning horizon to 2042. Several forecasts for each aviation demand indicator were developed to create a range of reasonable forecasts, from which a single forecast was selected for use in this master plan.

In 2022, the airport had an estimated 100,890 passenger enplanements. This represented a significant increase over 2021 when the airport had only 60,292 enplanements. The increase is attributable to the emergence from the COVID-19 pandemic and the addition of service by two new airlines at the airport. The airport is forecast to continue to see increasing enplanements over the planning period which will be driven by additional routes, an increase in the frequency of routes, and an industry wide transition to larger aircraft. By 2042, enplanements are forecast to reach 154,500.

Commercial operations are projected to spike in the next five years as new routes and additional flights to current markets are added. In the six-to-10-year time frame, the smaller 50-seat commuter aircraft are projected to be phased out of service to be replaced with larger aircraft. By the 10-20-year timeframe all commercial aircraft are projected to be in the air carrier category (>59 seats).

| | 2022 | 2027 | 2032 | 2042 | CAGR 2022-2042 |
|---|---|---|---|---|---|
| **ENPLANEMENTS AND AIR CARGO** | | | | | |
| Annual Enplanements | 100,890 | 139,402 | 148,602 | 154,500 | 2.15% |
| Air Cargo (lbs.) | 2,643,117 | 3,361,260 | 4,057,350 | 5,737,840 | 3.95% |
| **ANNUAL OPERATIONS** | | | | | |
| Commercial Operations (Itinerant) | | | | | |
| Air Carrier (>59 seats) | 1,860 | 2,748 | 3,190 | 2,728 | 1.93% |
| Commuter Airline (<60 seats) | 2,044 | 1,123 | 0 | 0 | -100.00% |
| Air Cargo | 2,235 | 2,841 | 3,430 | 4,850 | 3.95% |
| Other Air Taxi | 16,304 | 18,694 | 21,712 | 25,803 | 2.32% |
| Total Commercial Operations | 22,443 | 25,406 | 28,332 | 33,381 | 2.00% |
| General Aviation Operations | | | | | |
| Itinerant | 17,100 | 19,101 | 21,234 | 26,242 | 2.16% |
| Local | 21,951 | 24,311 | 27,026 | 33,400 | 2.12% |
| Total General Aviation Operations | 39,051 | 43,412 | 48,260 | 59,642 | 2.14% |
| Military Operations | | | | | |
| Itinerant | 548 | 549 | 549 | 549 | 0.01% |
| Local | 345 | 298 | 298 | 298 | -0.73% |
| Total Military Operations | 893 | 847 | 847 | 847 | -0.26% |
| **Total Itinerant Operations** | **40,091** | **45,056** | **50,116** | **60,173** | **2.05%** |
| **Total Local Operations** | **22,296** | **24,609** | **27,324** | **33,698** | **2.09%** |
| **TOTAL ANNUAL OPERATIONS** | **62,387** | **69,665** | **77,439** | **93,870** | **2.06%** |
| **BASED AIRCRAFT** | | | | | |
| Single Engine Piston | 175 | 176 | 182 | 197 | 0.59% |
| Multi-Engine Piston | 15 | 14 | 13 | 11 | -1.54% |
| Turboprop | 19 | 23 | 25 | 29 | 2.14% |
| Jet | 12 | 15 | 18 | 25 | 3.74% |
| Helicopter | 19 | 21 | 24 | 28 | 1.96% |
| **TOTAL BASED AIRCRAFT** | **240** | **249** | **262** | **290** | **0.95%** |

***CAGR*** - Compound annual growth rate

| PEAKING ACTIVITY PROJECTIONS | BASE YEAR | 2027 | 2032 | 2042 |
|---|---|---|---|---|
| **AIRLINE PASSENGER ACTIVITY** | | | | |
| Annual Enplanements | 100,890 | 139,402 | 148,602 | 154,500 |
| Peak Month Enplanements | 9,806 | 13,549 | 14,443 | 15,017 |
| Design Day Enplanements | 530 | 732 | 781 | 812 |
| Design Hour Enplanements | 182 | 251 | 268 | 279 |
| Design Hour Deplanements | 244 | 337 | 359 | 374 |
| **AIRLINE OPERATIONS** | | | | |
| Annual Operations | 3,905 | 3,871 | 3,190 | 2,728 |
| Peak Month | 350 | 347 | 286 | 245 |
| Design Day | 12 | 12 | 10 | 8 |
| Design Hour | 4 | 4 | 3 | 3 |
| **TOTAL AIRPORT OPERATIONS** | | | | |
| Annual Operations | 62,387 | 69,665 | 77,439 | 93,870 |
| Peak Month | 7,403 | 8,267 | 9,189 | 11,139 |
| Design Day | 239 | 267 | 296 | 359 |
| Busy Day | 340 | 381 | 424 | 514 |
| Design Hour | 51 | 57 | 63 | 77 |

Air taxi operations, which include air cargo, air ambulance, firefighting, fractionals, and other "for-hire" activity are projected to grow over the planning period as well. General aviation activity is projected to remain a substantial element of activity at RDD through the years.

Total operations are projected to increase from 62,387 in 2022 to 93,870 in 2042. The airport has had nearly 100,000 operations in the recent past, including in 2011-2014 and again in 2017.

Based aircraft are forecast to increase from approximately 240 in 2022 to 290 by 2042 for an annual growth rate of 1.91 percent.

Projections of aviation demand will be influenced by unforeseen factors and events in the future. In the recent past, factors such as terrorist attacks, economic recession, and the pandemic have impacted aviation demand. Nonetheless, the forecasts developed for this planning effort are considered reasonable for planning purposes. The FAA will review and, if acceptable, approve these forecasts for planning purposes.

## FORECAST COMPARISON TO THE FAA TAF

When reviewing airport master plan forecasts, FAA compares them to the most recent TAF for consistency. To be consistent with the TAF, the master plan forecasts should differ by 10 percent or less in the first five years and 15 percent or less in the 10-year timeframe. In addition, the forecasts should not affect the timing of a project or the role of the airport. If the forecasts are not consistent with these parameters, then further discussion with the local FAA Airport District Office (ADO) will be required. Ultimately, the forecasts may be forwarded to FAA headquarters in Washington, D.C. for further review. Deviation from these thresholds will require specific local documentation, which is included in this chapter.

**Table 2RR** presents a comparison of the master plan forecasts and the FAA TAF (published February, 2023) for passenger enplanements, commercial operations, total operations, and based aircraft. The percentage difference is the absolute value of the difference between the two numbers divided by the average of the two numbers. The base year was established as the calendar year of 2022

*Enplanements*: In 2022, the airport documented a total of 100,890 enplanements (revenue and non-revenue). The TAF enplanement number of 96,563 is below the actual number of enplanements. In some markets, such as RDD, passenger traffic is exploding. RDD set a record for enplanements in 2022 exceeding the 2006 record of 68,000 enplanements; therefore, it is not unexpected that there would be a difference between the TAF and the master plan forecast. In the forecast years, the TAF shows very slow growth and does not take into consideration the new routes currently planned or in development.

**TABLE 2RR | Forecast Comparison to the 2022 FAA Terminal Area Forecast (TAF)**

| | 2022 | 2027 | 2032 | 2042 | CAGR 2022-2042 |
|---|---|---|---|---|---|
| **Passenger Enplanements** | | | | | |
| Master Plan Forecast | 100,890 | 139,402 | 148,602 | 154,500 | 2.15% |
| FAA TAF 2022[1] | 96,563 | 98,474 | 100,412 | 104,462 | 0.39% |
| % Difference | 4.4% | 34.4% | 38.7% | 38.6% | |
| TAF Growth Rate-RDD Base+DEN[2] | 100,890 | 126,729 | 129,219 | 134,348 | 1.44% |
| % Difference | 0.0% | 9.5% | 14.0% | 14.0% | |
| **Commercial Operations (Air Carrier/Commuter/Air Taxi)** | | | | | |
| Master Plan Forecast | 22,443 | 25,406 | 28,332 | 33,381 | 2.00% |
| FAA TAF 2022[1] | 19,731 | 24,535 | 25,728 | 28,298 | 1.82% |
| % Difference | 12.9% | 3.5% | 9.6% | 16.5% | |
| **Total Operations** | | | | | |
| Master Plan Forecast | 62,387 | 69,665 | 77,439 | 93,870 | 2.06% |
| FAA TAF 2022[1] | 57,401 | 74,148 | 77,714 | 85,384 | 2.01% |
| % Difference | 8.3% | 6.2% | 0.4% | 9.5% | |
| **Based Aircraft** | | | | | |
| Master Plan Forecast | 240 | 249 | 262 | 290 | 0.95% |
| FAA TAF 2022[1] | 240 | 263 | 288 | 344 | 1.82% |
| % Difference | 0.0% | 5.1% | 9.5% | 17.0% | |

[1]TAF published in Feb. 2023
[2]TAF baseline adjusted to actual 2022 enplanements then 0.39% TAF annual growth rate applied and DEN service enplanements of 23,579 added in 2024.
CAGR: Compound annual growth rate

In 2021, two new airlines began service at RDD. Avelo Airlines began twice weekly service to Las Vegas (MCR) and Burbank (BUR) utilizing the 189-seat Boeing 737-800 aircraft. Alaska Airlines began daily service to Seattle (SEA) utilizing the 76 seat Embraer 175. Existing twice daily service provided by United to San Francisco (SFO) utilizing both the 50-seat CRJ-200 and the 70-seat CRJ-700 as well as once daily service to Los Angeles (LAX) utilizing the 50-seat CRJ200, continued. Throughout 2022, boarding load factors have increased each month with November 2022 having more than 90 percent of all available departing seats filled. United has also committed to initiating service to Denver (DEN) sometime within the next two years once they are able to address a pilot shortage.

The selected enplanement forecast was developed in coordination with FAA. FAA recognized that the TAF was under-reporting actual enplanements, and that inclusion of a future Denver daily flight was justified by the USDOT issuing a SCASDP grant to provide a minimum revenue guarantee to the airline. Following inclusion of potential Denver enplanements in 2024, the TAF growth rate was then applied to the forecast years. This "TAF Growth Rate-RDD Base+DEN" serves as the baseline for comparison of the master plan forecasts. The master plan enplanement forecast is within 9.5 percent of TAF Growth Rate-RDD Base+DEN in the first five years and within 14.0 percent in the 10-year timeframe.

*Commercial Operations*: The 2022 TAF (published in February 2023) estimated 19,731 commercial operations (Air Carrier and Air Taxi) in 2022. According to tower operational counts, there were 22,443 actual commercial operations in 2022. While the TAF is 13% lower than the actual 2022 commercial operations, the master plan forecast is within 3.5 percent in the five-year timeframe and 9.6 percent in the 10-year timeframe.

*Total Operations*: The total operations forecast is within the TAF tolerance of 10 percent in the five-year term and 15 percent in the 10-year term.

*Based Aircraft*: The based aircraft master plan forecast is within the FAA tolerance of 10 percent in the five-year term and 15 percent in the 10-year term.

## *AIRCRAFT/AIRPORT/RUNWAY CLASSIFICATION*

The FAA has established several aircraft classification systems that group aircraft types based on their performance (approach speed in landing configuration) and design characteristics (wingspan and landing gear configuration). These classification systems are used to determine the appropriate airport design standards for specific airport elements such as runways, taxiways, taxilanes, and aprons.

### AIRCRAFT CLASSIFICATION

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or are expected to use an airport. The critical aircraft is used to define the design parameters for an airport. The design aircraft may be a single aircraft type or a composite aircraft representing a collection of aircraft with similar characteristics. The design aircraft is classified by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). FAA AC 150/5300-13B, *Airport Design*, describes the following airplane classification systems, the parameters of which are presented on **Exhibit 2K**.

***Aircraft Approach Category (AAC):*** A grouping of aircraft based on a reference landing speed ($V_{REF}$), if specified, or if $V_{REF}$ is not specified, 1.3 times stall speed ($V_{SO}$) at the maximum certificated landing weight. $V_{REF}$, $V_{SO}$, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry.

The AAC generally refers to the approach speed of an aircraft in landing configuration. The higher the approach speed, the more restrictive the applicable design standards. The AAC, depicted by a letter A through E, is the aircraft approach category and relates to aircraft approach speed (operational characteristic). The AAC generally applies to runways and runway-related facilities such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

***Airplane Design Group (ADG)***: The ADG, depicted by a Roman numeral I through VI, is a classification of aircraft which relates to aircraft wingspan or tail height (physical characteristic). When the aircraft wingspan and tail height fall in different groups, the higher group is used. The ADG influences design standards for taxiway safety area (TSA), taxiway object free (TOFA), taxilane object free area, apron wingtip clearance, and various separation distances.

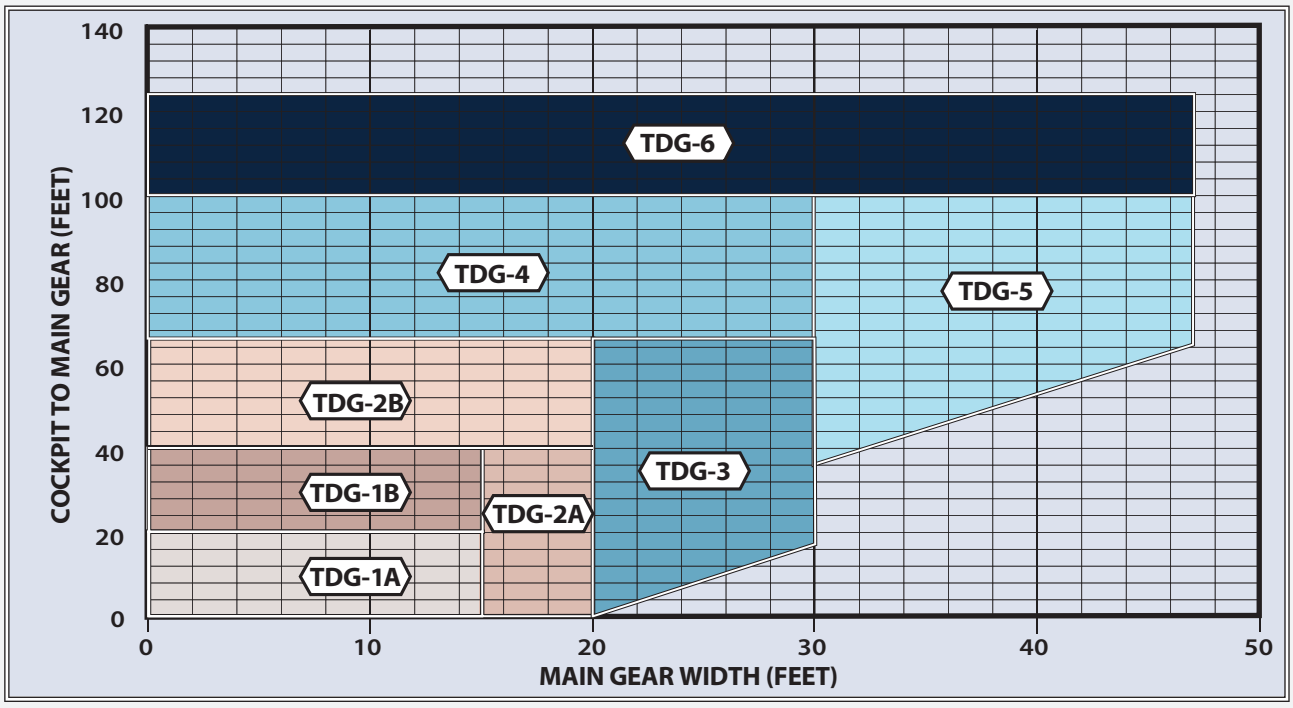
| AIRCRAFT APPROACH CATEGORY (AAC) | |
|---|---|
| **Category** | **Approach Speed** |
| A | less than 91 knots |
| B | 91 knots or more but less than 121 knots |
| C | 121 knots or more but less than 141 knots |
| D | 141 knots or more but less than 166 knots |
| E | 166 knots or more |

| AIRPLANE DESIGN GROUP (ADG) | | |
|---|---|---|
| **Group #** | **Tail Height (ft)** | **Wingspan (ft)** |
| 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 |

| VISIBILITY MINIMUMS | |
|---|---|
| **RVR* (ft)** | **Flight Visibility Category (statute miles)** |
| VIS | 3-mile or greater visibility minimums |
| 5,000 | Not lower than 1-mile |
| 4,000 | Lower than 1-mile but not lower than ¾-mile |
| 2,400 | Lower than ¾-mile but not lower than ½-mile |
| 1,600 | Lower than ½-mile but not lower than ¼-mile |
| 1,200 | Lower than ¼-mile |

***RVR**: Runway Visual Range

**TAXIWAY DESIGN GROUP (TDG)**




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

***Taxiway Design Group (TDG)***: A classification of airplanes based on outer-to-outer Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distance. The TDG relates to the undercarriage dimensions of the design aircraft. The taxiway design elements determined by the application of the TDG include the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet dimensions, and, in some cases, the separation distance between parallel taxiways/taxilanes. Other taxiway elements such as the taxiway safety area (TSA), taxiway/taxilane object free area (TOFA), taxiway/taxilane separation to parallel taxiway/taxilanes or fixed or movable objects, and taxiway/taxilane wingtip clearances are determined solely based on the wingspan (ADG) of the design aircraft utilizing those surfaces. It is appropriate for taxiways to be planned and built to different TDG standards based on expected use.

**Exhibit 2L** summarizes the classification of the most common aircraft in operation today. Generally, recreational and business piston and turboprop aircraft will fall in AAC A and B and ADG I and II. Business jets typically fall in ACC B and C, while the larger commercial aircraft will fall in AAC C and D.

## AIRPORT AND RUNWAY CLASSIFICATION

Airport and runway classifications, along with the aircraft classifications defined previously, are used to determine the appropriate FAA design standards to which the airfield facilities are to be designed and built.

***Runway Design Code (RDC):*** A code signifying the design standards to which the runway is to be built. The RDC is based upon planned development and has no operational component.

The AAC, ADG, and runway visual range (RVR) are combined to form the RDC of a particular runway. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. The third component relates to the available instrument approach visibility minimums expressed by RVR values in feet of 1,200 (⅛-mile), 1,600 (¼-mile), 2,400 (½-mile), 4,000 (¾-mile), and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways. The third component reads "VIS" for runways designed for visual approach use only.

***Approach Reference Code (APRC):*** A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations. Like the RDC, the APRC is composed of the same three components: the AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under particular meteorological conditions where no special operating procedures are necessary, as opposed to the RDC which is based upon planned development with no operational component. The APRC for a runway is established based upon the minimum runway to taxiway centerline separation.

***Departure Reference Code (DPRC):*** A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to takeoff operations. The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operating conditions. The DPRC is similar to the APRC, but is composed of two components, ACC and ADG. A runway may have more than one DPRC depending on the parallel taxiway separation distance.

## A-I

| Aircraft | TDG |
|---|---|
| • Beech Baron 55 | 1A |
| • **Beech Bonanza** | **1A** |
| • Cessna 150, 172 | 1A |
| • Eclipse 500 | 1A |
| • Piper Archer, Seneca | 1A |

## B-I

| | |
|---|---|
| • **Beech Baron 58** | **1A** |
| • Beech King Air 90 | 1A |
| • Cessna 421 | 1A |
| • Cessna Citation CJ1 (525) | 1A |
| • Cessna Citation 1(500) | 2A |
| • Embraer Phenom 100 | 1B |

## A/B-II *12,500 lbs. or less*

| | |
|---|---|
| • **Beech Super King Air 200** | **2A** |
| • Cessna 441 Conquest | 1A |
| • Cessna Citation CJ2 (525A) | 2A |
| • Pilatus PC-12 | 1A |

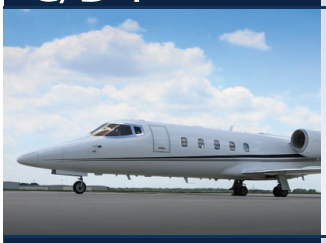
## B-II *over 12,500 lbs.*

| | |
|---|---|
| • Beech Super King Air 350 | 2A |
| • Cessna Citation CJ3(525B), V (560) | 2A |
| • Cessna Citation Bravo (550) | 1A |
| • **Cessna Citation CJ4 (525C)** | **1B** |
| • Cessna Citation Latitude/Longitude | 1B |
| • Embraer Phenom 300 | 1B |
| • Falcon 10, 20, 50 | 1B |
| • Falcon 900, 2000 | 2A |
| • Hawker 800, 800XP, 850XP, 4000 | 1B |
| • Pilatus PC-24 | 1B |

## A/B-III

| | |
|---|---|
| • Bombardier Dash 8 | 3 |
| • **Bombardier Global 5000,** 6000, 7000, 8000 | **2B** |
| • Falcon 6X, 7X, 8X | 2B |

## C/D-I



| Aircraft | TDG |
|---|---|
| • **Lear** 25, 31, 45, 55, **60** | **1B** |
| • Learjet 35, 36 (D-I) | 1B |

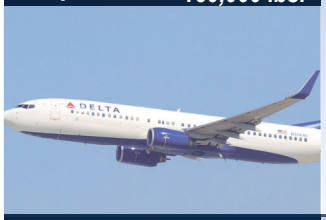
## C/D-II

| | |
|---|---|
| • Challenger 600/604/ 800/850 | 1B |
| • Cessna Citation VII, X+ | 1B |
| • Embraer Legacy 450/500 | 1B |
| • **Gulfstream IV,** 350, 450 (D-II) | 2A |
| • Gulfstream G200/G280 | 1B |
| • Lear 70, 75 | 1B |
| • CRJ 700 | 2B |
| • ERJ 175, 195 | 3 |
| • CRJ 900 | 2B |

## C/D-III *less than 150,000 lbs.*

| | |
|---|---|
| • Gulfstream V | 2A |
| • **Gulfstream** G500, 550, 600, **650 (D-III)** | **2B** |

## C/D-III *over 150,000 lbs.*



| | |
|---|---|
| • Airbus A319-100, 200 | 3 |
| • **Boeing 737 -800,** 900, BBJ2 (D-III) | **3** |
| • MD-83, 88 (D-III) | 4 |

## C/D-IV

| | |
|---|---|
| • Airbus A300-100, 200, 600 | 5 |
| • Boeing 757-200 | 4 |
| • **Boeing 767**-300, **400** | **5** |
| • MD-11 | 6 |

## D-V

| | |
|---|---|
| • Airbus A330-200, 300 | 5 |
| • Airbus A340-500, 600 | 6 |
| • Boeing 747-100 - 400 | 5 |
| • Boeing 777-300 | 6 |
| • **Boeing 787-8,** 9 | **5** |

Note: Aircraft pictured is identified in bold type.

***Airport Reference Code (ARC)*:** An airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely at an airport. The current Airport Layout Plan (ALP) for the airport, which will be updated as part of this planning effort, identifies an ARC of C-III currently and in the future.

## *CRITICAL AIRCRAFT*

The selection of appropriate FAA design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or are expected to use an airport. The critical aircraft is used to define the design parameters for an airport. The critical aircraft may be a single aircraft or a composite aircraft representing a collection of aircraft classified by the three parameters: AAC, ADG, and TDG. In the case of an airport with multiple runways, a design aircraft is selected for each runway.

The first consideration is the safe operation of aircraft likely to use an airport. Any operation of an aircraft that exceeds design criteria of an airport may result in either an unsafe operation or a lesser safety margin; however, it is not the usual practice to base the airport design on an aircraft that uses the airport infrequently.

FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, provides guidance on determining the critical aircraft for the airport and each runway. **The critical aircraft is defined as the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, excluding touch-and-go operations.** Planning for future aircraft use is of particular importance since the design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure that short-term development does not preclude the reasonable long range potential needs of the airport.

According to FAA AC 150/5300-13B, *Airport Design*, "airport designs based only on existing aircraft can severely limit the ability to expand the airport to meet future requirements for larger, more demanding aircraft. Airport designs that are based on large aircraft never likely to be served by the airport are not economical." Selection of the current and future critical aircraft must be realistic in nature and supported by current data and realistic projections.

### AIRPORT CRITICAL AIRCRAFT

The airport experiences frequent activity by commercial passenger aircraft and business jets. Currently the largest commercial passenger aircraft operating is the Boeing 737-800. The airport also accommodates the largest business jets in production including a based Gulfstream 650.

The FAA maintains the Traffic Flow Management System Count (TFMSC) database which documents certain aircraft operations at airports. Information is added to the TFMSC database when pilots file flight plans and/or when flights are detected by the National Airspace System, usually via radar. It includes documentation of commercial traffic (air carrier and air taxi), general aviation, and military aircraft. Due to factors such as incomplete flight plans, limited radar coverage, and VFR operations, TFMSC data does not account for all aircraft activity at an airport by a given aircraft type; therefore, it is likely that there are more operations at an airport than are captured by this methodology. FAA indicates that for turboprops and jets, the capture rate is better than 95 percent because operators of these types of sophisticated aircraft generally file flight plans. TFMSC data is available for activity at the airport and was utilized in this analysis.

**Exhibit 2M** presents the TFMSC annual activity for jets and turboprops from 2013 through 2022. Aircraft in AAC C accounted for 3,878 operations in 2022 and have averaged 2,713 over the last five years. In 2022 there were 488 AAC D operations, and of this total 374 were by the Boeing 737-800 which Avelo Airlines operates. While the AAC D category does not fully meet the 500 operations threshold, it is a commercial passenger aircraft with a significant level of operations. In addition, a Gulfstream 650 private business jet that falls in ACC D, based at the airport in December of 2022. The combined future operations of these two aircraft may exceed the 500 operations threshold in the near future, however, as of this writing, the critical AAC for the airport is identified as AAC C.

Aircraft in ADG III accounted for 1,390 operations in 2022. The Alaska Air Q-400 accounted for most of these operations (622) along with the Boeing 737-800 aircraft (374). Aircraft classified in AAC D/E and in ADG IV do occasionally operate at the airport, but total combined operations by these aircraft have not reached the FAA's critical aircraft threshold in the past ten years. Therefore, the first two elements of the critical aircraft classification are C-III.

The third element of the critical aircraft classification is the TDG. An examination of the TFMSC shows specific aircraft types which have been cross references with the FAA's aircraft characteristics database (https://www.faa.gov/airports/engineering/aircraft_char_database). The critical aircraft TDG is "3" as best represented by the Boeing 737-800 aircraft in service at the airport.

**The current critical aircraft for the Airport, based on actual historical activity, is C-III-3.** A representative aircraft is the Boeing 737-800.

### Future Critical Aircraft

Section 2.3 of FAA AC 150/5000-17 outlines a specific approach to projecting a future critical aircraft. According to the AC, "The forecast, as submitted to FAA by the airport sponsor, must include a projection of the number of operations by the future critical aircraft for the planning horizon year (i.e., typically not more than 20 years from the base year). Proper diligence and awareness of aircraft fleet trends is needed when establishing the future critical aircraft, particularly in cases where the future RDC may change due to an aircraft type with greater requirements (i.e., runway or airfield geometry). Caution is warranted when a change in the critical aircraft is identified in the long-term forecast (years 11-20) given the uncertainty inherent to this forecast range. The long-term change to the critical aircraft must be supported by a reasonable forecast)."

| ARC | Aircraft | TDG | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-I | B36T - Allison 36 Turbine Bonanza | 1A | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 2 |
| | C10T - Cessna P210 (Turbo) | 1A | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 0 |
| | DA20 - Diamond DA 20 | 1A | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | EA50 - Eclipse 500 | 1A | 16 | 24 | 10 | 20 | 18 | 6 | 6 | 6 | 8 | 2 |
| | EPIC - Dynasty | ND | 2 | 4 | 2 | 0 | 4 | 4 | 0 | 6 | 10 | 8 |
| | EVOL - Lancair Evolution | ND | 8 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | EVOT - Lancair Evolution Turbine | ND | 2 | 2 | 2 | 4 | 0 | 0 | 0 | 2 | 2 | 0 |
| | KODI - Quest Kodiak | 1A | 0 | 2 | 0 | 2 | 0 | 2 | 2 | 6 | 8 | 6 |
| | LNP4 - Lancair Propjet four-seat | ND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | P46T - Piper Malibu Meridian | 1A | 58 | 34 | 36 | 58 | 78 | 102 | 40 | 20 | 44 | 44 |
| | PC7 - Pilatus PC-7 | ND | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 |
| | SF50 - Cirrus Vision SF50 | 1A | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 62 | 82 |
| | TBM7 - Socata TBM-7 | ND | 4 | 12 | 6 | 4 | 6 | 4 | 10 | 12 | 30 | 22 |
| | TBM8 - Socata TBM-850 | ND | 10 | 16 | 10 | 4 | 2 | 6 | 8 | 4 | 18 | 10 |
| | TBM9 - Socata TBM | ND | 0 | 0 | 0 | 0 | 14 | 6 | 4 | 20 | 68 | 34 |
| | Total | | 102 | 94 | 68 | 104 | 126 | 136 | 74 | 82 | 252 | 212 |
| A-II | C208 - Cessna 208 Caravan | 1A | 1,570 | 1,606 | 1,602 | 1,626 | 1,702 | 2,228 | 1,954 | 2,184 | 2,492 | 2,384 |
| | C212 - CASA Aviocar | ND | 0 | 2 | 0 | 0 | 2 | 4 | 0 | 2 | 2 | 4 |
| | DHC6 - DeHavilland Twin Otter | 1A | 14 | 14 | 8 | 2 | 4 | 6 | 10 | 4 | 2 | 14 |
| | PC12 - Pilatus PC-12 | 1A | 52 | 72 | 150 | 138 | 164 | 196 | 184 | 314 | 370 | 426 |
| | Total | | 1,636 | 1,694 | 1,760 | 1,766 | 1,872 | 2,434 | 2,148 | 2,504 | 2,866 | 2,828 |
| A-III | DHC7 - De Havilland DHC-7 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | Total | | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| B-I | AC80 - Aero Commander Turbo 680 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 |
| | BE10 - Beech King Air 100 A/B | ND | 8 | 4 | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 0 |
| | BE40 - Raytheon/Beech Beechjet 400/T-1 | 1A | 18 | 12 | 30 | 16 | 6 | 6 | 12 | 8 | 20 | 32 |
| | BE9 - Beechcraft C99 Airliner; Beech Aircraft | 1A | 4 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | BE90 - Beech King Air 90 | 1A | 8 | 4 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| | BE9L - Beech King Air 90 | 1A | 1,150 | 1,484 | 1,282 | 614 | 754 | 838 | 962 | 822 | 508 | 354 |
| | C25M - Cessna Citation M2 | 1A | 0 | 0 | 0 | 0 | 0 | 10 | 2 | 8 | 6 | 8 |
| | C425 - Cessna 425 Corsair | 1A | 16 | 24 | 24 | 22 | 12 | 10 | 4 | 10 | 16 | 2 |
| | C500 - Cessna 500/Citation I | 2 | 0 | 0 | 2 | 0 | 2 | 4 | 6 | 0 | 2 | 0 |
| | C501 - Cessna I/SP | 2 | 12 | 16 | 0 | 10 | 4 | 8 | 8 | 42 | 14 | 10 |
| | C510 - Cessna Citation Mustang | 1A | 14 | 16 | 10 | 8 | 4 | 28 | 24 | 28 | 16 | 16 |
| | C525 - Cessna CitationJet/CJ1 | 1A | 134 | 140 | 60 | 88 | 72 | 62 | 54 | 40 | 180 | 126 |
| | CL41 - Canadair CL-41 Tutor | ND | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 |
| | E50P - Embraer Phenom 100 | 1B | 10 | 30 | 38 | 24 | 20 | 18 | 8 | 4 | 4 | 4 |
| | FA10 - Dassault Falcon/Mystère 10 | 1B | 2 | 4 | 0 | 2 | 6 | 0 | 2 | 4 | 6 | 2 |
| | H25C - BAe/Raytheon HS 125-1000/ Hawker 1000 | 1B | 76 | 20 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | HDJT - HONDA HA-420 HondaJet | ND | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 6 | 2 | 8 |
| | MU2 - Mitsubishi Marquise/Solitaire | 1A | 12 | 6 | 4 | 2 | 0 | 4 | 4 | 0 | 2 | 2 |
| | MU30 - Mitsubishi MU300/ Diamond I | 1A | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| | P180 - Piaggio P-180 Avanti | 2 | 10 | 0 | 2 | 0 | 2 | 4 | 2 | 2 | 0 | 4 |
| | PAY1 - Piper Cheyenne 1 | 2 | 4 | 6 | 0 | 2 | 2 | 10 | 0 | 0 | 2 | 0 |

| ARC | Aircraft | TDG | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-I Cont. | PAY2 - Piper Cheyenne 2 | 2 | 348 | 572 | 594 | 456 | 330 | 192 | 0 | 0 | 2 | 2 |
| | PAY3 - Piper PA-42-720 Cheyenne 3 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PAY4 - Piper Cheyenne 400 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| | PAYE - Cheyenne | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PRM1 - Raytheon Premier 1/390 Premier 1 | 1A | 16 | 38 | 6 | 8 | 10 | 6 | 14 | 18 | 16 | 16 |
| | SBR1 - North American Rockwell Sabre 40/60 | ND | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 0 | 0 |
| | T33 - Canadair CL-30 Silver Star | ND | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | TEX2 - Raytheon Texan 2 | 1A | 0 | 6 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| | Total | | 1,846 | 2,400 | 2,064 | 1,260 | 1,234 | 1,212 | 1,110 | 996 | 800 | 590 |
| B-II | AC69 - Jet Prop /Gulfstream | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 |
| | AC90 - Gulfstream Commander | 2 | 12 | 12 | 24 | 2 | 24 | 28 | 24 | 130 | 112 | 36 |
| | B190 - Beech 1900/C-12J | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | B350 - Beech Super King Air 350 | 2 | 84 | 48 | 74 | 58 | 50 | 100 | 110 | 174 | 92 | 112 |
| | BE20 - Beech 200 Super King | 2 | 666 | 942 | 810 | 860 | 886 | 982 | 1,256 | 1,426 | 2,156 | 2,196 |
| | BE30 - Raytheon 300 Super King Air | 2 | 12 | 22 | 16 | 8 | 4 | 22 | 12 | 10 | 24 | 52 |
| | BE9T - Beech F90 King Air | 1A | 12 | 2 | 12 | 20 | 36 | 14 | 138 | 64 | 40 | 68 |
| | C25A - Cessna Citation CJ2 | 2 | 34 | 28 | 22 | 8 | 10 | 14 | 18 | 24 | 18 | 30 |
| | C25B - Cessna Citation CJ3 | 2 | 26 | 10 | 14 | 10 | 32 | 98 | 88 | 68 | 98 | 64 |
| | C25C - Cessna Citation CJ4 | 1B | 2 | 2 | 6 | 16 | 12 | 12 | 28 | 32 | 20 | 14 |
| | C441 - Cessna Conquest | 1A | 116 | 148 | 122 | 154 | 142 | 162 | 76 | 50 | 6 | 6 |
| | C550 - Cessna Citation II/Bravo | 2 | 202 | 144 | 164 | 62 | 82 | 104 | 52 | 34 | 58 | 84 |
| | C551 - Cessna Citation II/SP | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| | C55B - Cessna Citation Bravo | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 6 |
| | C560 - Cessna Citation V/Ultra/Encore | 2 | 482 | 444 | 440 | 474 | 428 | 348 | 310 | 176 | 314 | 312 |
| | C56X - Cessna Excel/XLS | 1B | 26 | 44 | 42 | 54 | 66 | 104 | 72 | 28 | 62 | 52 |
| | C680 - Cessna Citation Sovereign | 1B | 18 | 6 | 22 | 4 | 28 | 16 | 16 | 18 | 26 | 22 |
| | C68A - Cessna Citation Latitude | 1B | 0 | 0 | 0 | 0 | 6 | 8 | 2 | 10 | 16 | 6 |
| | C700 - Cessna Citation Longitude | ND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | C750 - Cessna Citation X | 1B | 26 | 20 | 16 | 12 | 14 | 16 | 12 | 4 | 14 | 14 |
| | CL30 - Bombardier (Canadair) Challenger 300 | 1B | 12 | 10 | 18 | 18 | 10 | 12 | 10 | 16 | 20 | 14 |
| | CL35 - Bombardier Challenger 300 | 1B | 0 | 0 | 0 | 2 | 10 | 10 | 0 | 10 | 20 | 16 |
| | D328 - Dornier 328 Series | ND | 0 | 4 | 6 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |
| | E120 - Embraer Brasilia EMB 120 | 3 | 2,336 | 2,038 | 370 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | E55P - Embraer Phenom 300 | 1B | 6 | 12 | 20 | 48 | 32 | 84 | 42 | 28 | 42 | 66 |
| | F2TH - Dassault Falcon 2000 | 2 | 12 | 4 | 22 | 10 | 26 | 8 | 4 | 4 | 26 | 24 |
| | F900 - Dassault Falcon 900 | 2 | 2 | 6 | 2 | 10 | 6 | 6 | 8 | 0 | 6 | 6 |
| | FA20 - Dassault Falcon/Mystère 20 | 1B | 4 | 4 | 0 | 0 | 6 | 2 | 4 | 12 | 6 | 0 |
| | FA50 - Dassault Falcon/Mystère 50 | 1B | 0 | 0 | 0 | 2 | 6 | 6 | 4 | 6 | 14 | 6 |
| | HA4T - Hawker 4000 | 1B | 12 | 124 | 134 | 160 | 220 | 212 | 176 | 176 | 292 | 270 |
| | J328 - Fairchild Dornier 328 Jet | ND | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 |
| | PC24 - Pilatus PC-24 | ND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 4 |
| | SF34 - Saab SF 340 | ND | 0 | 0 | 0 | 998 | 414 | 0 | 0 | 0 | 0 | 0 |
| | SH33 - Shorts 330 | ND | 8 | 2 | 4 | 14 | 6 | 14 | 0 | 12 | 8 | 4 |
| | SH36 - Shorts 360 | ND | 0 | 0 | 0 | 2 | 2 | 0 | 6 | 14 | 2 | 4 |
| | SW2 - Swearingen Merlin 2 | ND | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |

| ARC | Aircraft | TDG | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-II cont. | SW3 - Fairchild Swearingen SA-226T/ TB Merlin 3 | ND | 90 | 82 | 104 | 90 | 86 | 68 | 70 | 36 | 8 | 4 |
| | SW4 - Swearingen Merlin 4/4A Metro2 | ND | 4 | 6 | 4 | 10 | 12 | 20 | 0 | 24 | 8 | 4 |
| | Total | | 4,206 | 4,164 | 2,470 | 3,112 | 2,658 | 2,474 | 2,542 | 2,590 | 3,530 | 3,502 |
| B-III | C2 - Grumman C-2 Greyhound | ND | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | DH8 - Bombardier DHC8 All Series | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | DH8A - Bombardier DHC8-100 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| | DH8C - Dash 8/DHC8-300 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| | E2 - Grumman TE-2 Hawkeye | ND | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | FA7X - Dassault Falcon F7X | 2 | 0 | 0 | 2 | 4 | 0 | 0 | 2 | 0 | 6 | 0 |
| | FA8X - Dassault Falcon 8X | ND | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| | GL5T - Bombardier BD-700 Global 5000 | 2 | 0 | 0 | 0 | 6 | 0 | 4 | 18 | 0 | 2 | 4 |
| | GLEX - Bombardier BD-700 Global Express | 2 | 4 | 8 | 6 | 6 | 2 | 4 | 2 | 4 | 4 | 2 |
| | U2 - Lockheed U-2 | ND | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 4 | 10 | 10 | 16 | 4 | 8 | 24 | 10 | 14 | 8 |
| C-I | LJ25 - Bombardier Learjet 25 | 1B | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | LJ31 - Bombardier Learjet 31/A/B | 1B | 6 | 10 | 2 | 8 | 12 | 0 | 2 | 6 | 8 | 0 |
| | LJ40 - Learjet 40; Gates Learjet | 1B | 0 | 10 | 4 | 2 | 2 | 0 | 2 | 6 | 0 | 4 |
| | LJ45 - Bombardier Learjet 45 | 1B | 6 | 6 | 12 | 6 | 6 | 12 | 10 | 2 | 28 | 14 |
| | LJ55 - Bombardier Learjet 55 | 1B | 0 | 10 | 2 | 4 | 10 | 0 | 6 | 0 | 8 | 12 |
| | LJ60 - Bombardier Learjet 60 | 1B | 12 | 18 | 22 | 16 | 26 | 22 | 16 | 8 | 24 | 18 |
| | LR60 - Bombardier Learjet 60 | 1B | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | WW24 - IAI 1124 Westwind | 1B | 2 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 2 | 0 |
| | Total | | 28 | 58 | 42 | 36 | 64 | 34 | 36 | 22 | 70 | 48 |
| C-II | ASTR - IAI Astra 1125 | 1B | 2 | 2 | 6 | 2 | 2 | 6 | 0 | 2 | 0 | 6 |
| | C650 - Cessna III/VI/VII | 1B | 20 | 8 | 0 | 10 | 6 | 2 | 0 | 4 | 0 | 2 |
| | CL60 - Bombardier Challenger 600/601/604 | 1B | 12 | 4 | 6 | 12 | 10 | 4 | 16 | 16 | 18 | 20 |
| | CRJ1 - Bombardier CRJ-100 | 1B | 0 | 0 | 2 | 6 | 6 | 2 | 4 | 0 | 0 | 0 |
| | CRJ2 - Bombardier CRJ-200 | 1B | 0 | 0 | 1,198 | 1,952 | 1,800 | 2,290 | 2,726 | 1,244 | 1,740 | 2,566 |
| | CRJ7 - Bombardier CRJ-700 | 2 | 0 | 0 | 2 | 0 | 266 | 0 | 4 | 66 | 346 | 214 |
| | E135 - Embraer ERJ 135/140/Legacy | 2 | 10 | 12 | 10 | 2 | 2 | 16 | 0 | 0 | 0 | 0 |
| | E35L - Embraer 135 LR | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 2 |
| | E545 - Embraer EMB-545 Legacy 450 | 1B | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 8 | 6 |
| | E550 - Embraer Legacy 500 | 1B | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 2 | 0 |
| | G150 - Gulfstream G150 | 1B | 6 | 4 | 0 | 2 | 4 | 4 | 4 | 0 | 6 | 8 |
| | G280 - Gulfstream G280 | 1B | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 12 | 12 | 14 |
| | GLF3 - Gulfstream III/G300 | 2 | 8 | 0 | 4 | 8 | 2 | 0 | 0 | 0 | 0 | 0 |
| | H25B - BAe HS 125/700-800/Hawker 800 | 1B | 34 | 32 | 16 | 30 | 10 | 18 | 20 | 16 | 12 | 20 |
| | LJ75 - Learjet 75 | 1B | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 4 |
| | Total | | 92 | 62 | 1,244 | 2,024 | 2,110 | 2,352 | 2,782 | 1,360 | 2,150 | 2,862 |
| C-III | A320 - Airbus A320 All Series | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | B462 - BAe 146 -200 | 2 | 2 | 12 | 8 | 12 | 6 | 6 | 0 | 6 | 14 | 0 |
| | B732 - Boeing 737-200/VC96 | 3 | 22 | 28 | 34 | 6 | 4 | 0 | 0 | 0 | 4 | 0 |
| | B733 - Boeing 737-300 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | 6 | 14 |
| | B734 - Boeing 737-400 | 3 | 0 | 0 | 2 | 16 | 16 | 20 | 38 | 4 | 0 | 0 |

| ARC | Aircraft | TDG | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-III cont. | B735 - Boeing 737-500 | 3 | 0 | 0 | 0 | 4 | 0 | 8 | 0 | 12 | 4 | 8 |
| | B737 - Boeing 737-700 | 3 | 0 | 8 | 2 | 6 | 0 | 2 | 0 | 0 | 50 | 60 |
| | BA46 - BAe 146/Avro RJ 70 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C27J - Alenia C-27J Spartan | ND | 0 | 0 | 0 | 38 | 52 | 42 | 24 | 30 | 20 | 76 |
| | DH8D - Bombardier Q-400 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 388 | 622 |
| | E170 - Embraer 170 | 3 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| | E75L - Embraer 175 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 108 |
| | MD87 - Boeing (Douglas) MD 87 | 4 | 0 | 2 | 4 | 0 | 0 | 2 | 2 | 4 | 0 | 0 |
| | P3 - Lockheed P-3C Orion | ND | 0 | 0 | 0 | 0 | 4 | 8 | 8 | 0 | 4 | 14 |
| | RJ85 - Avro RJ-85 | 2 | 0 | 6 | 4 | 2 | 2 | 2 | 10 | 8 | 6 | 18 |
| | Total | | 24 | 60 | 54 | 90 | 84 | 90 | 96 | 68 | 500 | 920 |
| C-IV | B752 - Boeing 757-200 | 4 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| | C130 - Lockheed 130 Hercules | ND | 32 | 26 | 38 | 22 | 4 | 14 | 4 | 12 | 22 | 2 |
| | C17 - Boeing Globemaster 3 | ND | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| | C30J - C-130J Hercules ; Lockheed | 2 | 0 | 2 | 0 | 0 | 18 | 14 | 6 | 26 | 16 | 22 |
| | E6 - Boeing E-6 Mercury | ND | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 32 | 30 | 40 | 28 | 22 | 32 | 10 | 38 | 38 | 24 |
| C-V | P8 - Boeing P-8 Poseidon | ND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 24 |
| | Total | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 24 |
| D-I | F15 - Boeing F-15 Eagle | ND | 2 | 0 | 0 | 0 | 16 | 2 | 2 | 0 | 0 | 0 |
| | F18 - Boeing FA-18 Hornet | ND | 2 | 2 | 4 | 0 | 2 | 0 | 4 | 0 | 0 | 0 |
| | F18H - F/A 18 Hornet | ND | 0 | 0 | 0 | 0 | 8 | 10 | 4 | 0 | 0 | 4 |
| | F18S - F18 Hornet | ND | 0 | 0 | 0 | 2 | 6 | 2 | 2 | 4 | 2 | 2 |
| | F22 - Boeing Raptor F22 | ND | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 0 |
| | LJ35 - Bombardier Learjet 35/36 | 1B | 22 | 36 | 18 | 12 | 16 | 28 | 18 | 14 | 22 | 12 |
| | LJ36 - Learjet 36 | 1B | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | T38 - Northrop T-38 Talon | ND | 8 | 2 | 0 | 2 | 2 | 2 | 4 | 4 | 4 | 6 |
| | Total | | 34 | 40 | 24 | 16 | 52 | 46 | 34 | 24 | 30 | 24 |
| D-II | GALX - IAI 1126 Galaxy/Gulfstream G200 | 1B | 4 | 10 | 10 | 0 | 8 | 8 | 10 | 0 | 10 | 0 |
| | GLF4 - Gulfstream IV/G400 | 2 | 18 | 20 | 12 | 18 | 28 | 12 | 16 | 10 | 24 | 2 |
| | Total | | 22 | 30 | 22 | 18 | 36 | 20 | 26 | 10 | 34 | 2 |
| D-III | B738 - Boeing 737-800 | 3 | 6 | 0 | 8 | 10 | 0 | 0 | 8 | 0 | 120 | 374 |
| | GA5C - G-7 Gulfstream G500 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 24 | 80 |
| | GA6C - G-7 Gulfstream G600 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | GLF5 - Gulfstream V/G500 | 2 | 10 | 10 | 2 | 10 | 6 | 12 | 10 | 14 | 12 | 2 |
| | GLF6 - Gulfstream | 2 | 0 | 0 | 4 | 2 | 0 | 2 | 2 | 0 | 6 | 6 |
| | MD83 - Boeing (Douglas) MD 83 | 4 | 18 | 16 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 34 | 26 | 38 | 24 | 6 | 14 | 24 | 14 | 164 | 462 |
| D-IV | DC10 - Boeing (Douglas) DC 10-10/30/40 | ND | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| | Total | | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| E-I | AJET - Dassault-Bréguet/Dornier Alpha Jet | ND | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: TFMSC - January 2013 thru December 2022. Data normalized annually.

**ARC** - Airport Reference Code
**ND** - No Data

## AIRPORT REFERENCE CODE (ARC) SUMMARY

| ARC | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| A-I | 102 | 94 | 68 | 104 | 126 | 136 | 74 | 82 | 252 | 212 |
| A-II | 1,636 | 1,694 | 1,760 | 1,766 | 1,872 | 2,434 | 2,148 | 2,504 | 2,866 | 2,828 |
| A-III | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| B-I | 1,846 | 2,400 | 2,064 | 1,260 | 1,234 | 1,212 | 1,110 | 996 | 800 | 590 |
| B-II | 4,206 | 4,164 | 2,470 | 3,112 | 2,658 | 2,474 | 2,542 | 2,590 | 3,530 | 3,502 |
| B-III | 4 | 10 | 10 | 16 | 4 | 8 | 24 | 10 | 14 | 8 |
| C-I | 28 | 58 | 42 | 36 | 64 | 34 | 36 | 22 | 70 | 48 |
| C-II | 92 | 62 | 1,244 | 2,024 | 2,110 | 2,352 | 2,782 | 1,360 | 2,150 | 2,862 |
| C-III | 24 | 60 | 54 | 90 | 84 | 90 | 96 | 68 | 500 | 920 |
| C-IV | 32 | 30 | 40 | 28 | 22 | 32 | 10 | 38 | 38 | 24 |
| C-V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 24 |
| D-I | 34 | 40 | 24 | 16 | 52 | 46 | 34 | 24 | 30 | 24 |
| D-II | 22 | 30 | 22 | 18 | 36 | 20 | 26 | 10 | 34 | 2 |
| D-III | 34 | 26 | 38 | 24 | 6 | 14 | 24 | 14 | 164 | 462 |
| D-IV | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| E-I | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 8,062 | 8,670 | 7,836 | 8,494 | 8,268 | 8,852 | 8,908 | 7,720 | 10,458 | 11,506 |

## APPROACH CATEGORY (AC)

| AC | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 1,738 | 1,788 | 1,828 | 1,870 | 1,998 | 2,570 | 2,224 | 2,586 | 3,118 | 3,040 |
| B | 6,056 | 6,574 | 4,544 | 4,388 | 3,896 | 3,694 | 3,676 | 3,596 | 4,344 | 4,100 |
| C | 176 | 210 | 1,380 | 2,178 | 2,280 | 2,508 | 2,924 | 1,488 | 2,766 | 3,878 |
| D | 90 | 98 | 84 | 58 | 94 | 80 | 84 | 50 | 230 | 488 |
| E | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 8,062 | 8,670 | 7,836 | 8,494 | 8,268 | 8,852 | 8,908 | 7,720 | 10,458 | 11,506 |

## DESIGN GROUP (DG)

| DG | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| I | 2,012 | 2,592 | 2,198 | 1,416 | 1,476 | 1,428 | 1,254 | 1,124 | 1,152 | 874 |
| II | 5,956 | 5,950 | 5,496 | 6,920 | 6,676 | 7,280 | 7,498 | 6,464 | 8,580 | 9,194 |
| III | 62 | 96 | 102 | 130 | 94 | 112 | 146 | 92 | 678 | 1,390 |
| IV | 32 | 32 | 40 | 28 | 22 | 32 | 10 | 40 | 40 | 24 |
| V | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 24 |
| TOTAL | 8,062 | 8,670 | 7,836 | 8,494 | 8,268 | 8,852 | 8,908 | 7,720 | 10,458 | 11,506 |

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Jets | 1,404 | 1,450 | 2,520 | 3,266 | 3,436 | 3,742 | 3,974 | 2,294 | 3,958 | 4,952 |
| TP | 6,658 | 7,220 | 5,316 | 5,228 | 4,832 | 5,110 | 4,934 | 5,426 | 6,500 | 6,554 |

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Previously, an operational fleet mix by engine type was presented in Table 2MM. To meet the requirements for determining a future critical aircraft, a projection of operations by ARC (ADG and AAC) has been developed. **Table 2SS** shows this projection for jets and turboprops. Only jets and turboprops were examined because the critical aircraft will be a jet or turboprop or a combination of the two and the TFMSC provides good data on operations by these aircraft types.

**TABLE 2SS | Jet & Turboprop Fleet Mix Forecast by Aircraft Reference Code**

| | Historical Jet & Turboprop Operations | | | | Forecast Jet & Turboprop Operations | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Design Category** | **2013** | **%** | **2022** | **%** | **2027** | **%** | **2032** | **%** | **2042** | **%** |
| AAC A/B | 7,794 | 96.7% | 7,140 | 62.1% | 9,470 | 59.0% | 10,650 | 59.0% | 13,364 | 59.0% |
| AAC C | 176 | 2.2% | 3,878 | 33.7% | 5,618 | 35.0% | 6,318 | 35.0% | 7,928 | 35.0% |
| AAC D | 90 | 1.1% | 488 | 4.2% | 803 | 5.0% | 903 | 5.0% | 1,133 | 5.0% |
| AAC E | 2 | 0.0% | 0 | 0.0% | 161 | 1.0% | 181 | 1.0% | 227 | 1.0% |
| **Total** | **8,062** | **100.0%** | **11,506** | **100.0%** | **16,050** | **100.0%** | **18,050** | **100.0%** | **22,650** | **100.0%** |
| ADG I | 2,012 | 25.0% | 874 | 7.6% | 1,124 | 7.0% | 1,264 | 7.0% | 1,586 | 7.0% |
| ADG II | 5,956 | 73.9% | 9,194 | 79.9% | 12,840 | 80.0% | 14,079 | 78.0% | 17,214 | 76.0% |
| ADG III | 62 | 0.8% | 1,390 | 12.1% | 2,006 | 12.5% | 2,527 | 14.0% | 3,511 | 15.5% |
| ADG IV/V | 32 | 0.4% | 48 | 0.4% | 80 | 0.5% | 181 | 1.0% | 340 | 1.5% |
| **Total** | **8,062** | **100.0%** | **11,506** | **100.0%** | **16,050** | **100.0%** | **18,050** | **100.0%** | **22,650** | **100.0%** |

AAC: Aircraft Approach Category; ADG: Airplane Design Group

Determining the future critical aircraft can be challenging as fleet mixes change over time. The Boeing 737-800 is anticipated to continue in service at the airport into the foreseeable future. This aircraft model accounted for 374 operations in 2022. Additional routes by Avelo Airlines utilizing the 737-800 are being considered which would lead to an increase in operations with this aircraft model. Several business jet models in the AAC D classification currently operate at the airport including a Gulfstream 650 that recently based at the airport in December 2022. Business jets in AAC D contributed 114 operations in 2022. In total, there were 488 operations by aircraft in AAC D in 2022. The addition of a new route by Avelo Airlines and/or continued increase in AAC D business jet operations would transition the airport to AAC D in the near term.

A potential new addition to the airfield that is currently being considered by the U.S. Forest Service (through contract with private companies) for firefighting is the DC-10-30 and the C-130. The DC-10-30 is a D-IV-5 aircraft and the C-130 is a C-IV-2B aircraft. Depending on the severity of the fire season, it is feasible that the combination of these two aircraft could operate over 500 times within any given year in the future; however, this may not be a consistent trend year-over-year. Nonetheless, planning of facilities (both landside and airfield) should not preclude meeting the D-IV-5 design standards where practicable.

**Table 2SS** reflects the possibility of a short term (by 2027) transition to D-III. Section 1.4 of FAA AC 150/5000-17 further states, "The future critical aircraft is determined with an FAA-approved forecast that considers aircraft 'highly likely' or 'expected' to regularly use the airport…" While an ultimate transition to D-IV is a possibility, it is currently speculative because the operator of the DC-10 and C-130 has indicated that a longer runway is needed. Until the runway is extended, it is not prudent to plan for such a transition. **Therefore, the future critical aircraft to be used for this master plan is D-III-3.** This critical aircraft is likely to be best represented by a combination of operations by 737-800's (D-III-3) and large business jets (D-III-2B).

## RUNWAY DESIGN CODE

Each runway is assigned an RDC. The RDC relates to specific FAA design standards that should be met in relation to each runway. The RDC takes into consideration the AAC, ADG, and the RVR. In most cases, the critical aircraft will also be the RDC for the primary runway.

### Current RDC

Runway 16-34 should be designed to accommodate the current and future critical aircraft. This runway is 7,003 feet long and 150 feet wide and has instrument landing system providing visibility minimums as low as ½-mile for approaches to Runway 34. The current ALP classifies this runway as D-IV-2400, however the TFMSC operational data does not support this classification at this time. Based on operations in 2022 obtained from the TFMSC, **the RDC for Runway 16-34 is C-III-2400**.

Runway 12-30 is the intersecting runway measuring 5,067 feet long and 150 feet wide. This runway has no straight-in instrument approach procedures. **The current ALP for the airport classifies this runway as C-III-VIS which is planned to be maintained.**

### Future RDC

The future RDC for each runway determines what design standards the runways are to be planned. As noted, the critical aircraft is planned to be D-IV-5 in the future and the ½-mile visibility minimums are to be maintained, therefore **the future RDC for Runway 16-34 is D-III-2400**. Runway 12-30 is shown to ultimately be removed from service on the current ALP because it does not meet the criteria for a cross-wind runway. Instead, a parallel general aviation runway is shown on the ALP with an RDC of B-II-VIS. **For planning purposes, the RDC for Runway 12-30 is maintained as C-III-VIS.** The subsequent runway analysis to be undertaken in the Facility Requirements and Alternatives chapters may necessitate revisiting the future RDC for both runways.

## APPROACH AND DEPARTURE REFERENCE CODES

The approach and departure reference codes (APRC and DPRC) describe the current operational capabilities of each runway and the adjacent parallel taxiways, where no special operating procedures are necessary. Essentially, the APRC and DPRC describe the current condition at an airport in runway classification terms when considering the parallel taxiway. Runway 12-30 does not have an applicable APRC or DPRC because it does not have a parallel taxiway. If in the future, a parallel taxiway is planned for Runway 12-30, then the APRC and DPRC classification would apply.

Taxiways D is 400 feet from Runway 16-34, centerline to centerline. The lowest instrument approach visibility minimum to the runway is ½-mile. The APRC for Runway 16-34 is D-IV-2400 and D-V-2400. This essentially means that the runway could accommodate regular use by up to D-V aircraft without the need for any physical changes to the runway/taxiway system. The DPRC for Runway 16-34 is D-IV and D-V.

## CRITICAL AIRCRAFT SUMMARY

**Table 2TT** summarizes the airport and runway classification for the current and future condition. Based upon current activity levels, the airport is best classified as ARC C-III. In the future, the airport may transition to ARC D-III if larger aircraft in this category account for at least 500 annual operations. The RDC for Runway 16-34 is currently C-III-2400 with a future transition to D-III-2400. Runway 12-30 is currently classified as C-III-VIS. Subsequent analysis in this master plan will present a plan for Runway 12-30 which may include closure, conversion to an additional runway (to be funded locally), or replacement with a parallel runway. Therefore, the future RDC for Runway 12-30 is unknown at this time. For purposes of this stage of the planning process, the future RDC for Runway 12-30 is planned to remain C-III-VIS.

**TABLE 2TT | Airport and Runway Classifications**

| | CURRENT | FUTURE |
|---|---|---|
| Airport Reference Code (ARC) | C-III | D-III |
| Airport Design Aircraft | C-III-3 | D-III-3 |
| **Runway Design Code (RDC)** | | |
| Runway 16-34 | C-III-2400 | D-III-2400 |
| Runway 12-30 | C-III-VIS | C-III-VIS |
| **Approach Reference Code (APRC)** | | |
| Runway 16-34 | D-IV-2400/D-V-2400 | D-IV-2400/D-V-2400 |
| Runway 12-30 | NA | NA |
| **Departure Reference Code (DPRC)** | | |
| Runway 16-34 | D-IV/D-V | D-IV/D-V |
| Runway 12-30 | NA | NA |

*Source: Current Airport Layout Plan; FAA AC 150/5300-13B, Airport Design*

## *SUMMARY*

This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period as well as the critical aircraft for the airport. Airline passenger enplanements are forecast to grow from 100,890 in 2022 to 154,500 by 2042, an annual growth rate of 2.15 percent. Total operations are forecast to grow 2.06 percent annually. Based aircraft are forecast to grow from 240 currently to 290 in the long term for an annual growth rate of 0.95 percent.

The critical aircraft for the airport was determined by examining the FAA TFMSC database of flight plans to and from the airport. Based on 2022 data, the current critical aircraft is described as ARC C-III-3 which is primarily represented by the Boeing 737-800. The future critical aircraft is described as D-III-5, which would be represented by the combination of a larger commercial aircraft and large business jets.

The next step in the planning process is to assess the capabilities of the existing facilities to determine what improvements may be necessary to meet future demands. The range of forecasts developed here will be taken forward in the next chapter as planning horizon activity levels that will serve as milestones or activity benchmarks in evaluating facility requirements.

# Attachment 1

Terminal Capacity Study

# CHAPTER 1 - DEMAND FORECAST

## FORECAST OVERVIEW

This forecast analysis is focused on a 20-year projection of commercial passenger enplanement, operations, and peak activity at RDD. The 2022 flight service scheduled served as the basis of this analysis due to reliable historical passenger enplanement and commercial operations data not being available. It was found that enplanement levels for FAA fiscal year 2022 found in the FAA Terminal Area Forecast (TAF) was not accurate as enplanement levels had surpassed TAF projections by March of 2022.

The forecast method is based on forecasting the total number of departing seats on scheduled flights and applying three load factor scenarios to determine enplanements. The operations forecast was similarly calculated using a range of aircraft seat capacities against the projected number of departing seats. The preferred seat forecast method is based a hybrid method of using growth rates from the TAF of a peer airport and the California TAF. The preferred enplanement forecast is then based on the 85 percent load factor scenario. Commercial operations are expected to increase with the increasing enplanements expected to be accommodated using larger aircraft. As a result, air carrier operations are projected to increase an average of seven percent through the forecast period. Air taxi operations are expected to remain stable through the same period. **Table 1-1**: summarizes the preferred forecast results.

**Table 1-1: Preferred Enplanement and Operations Forecast Summary**

| Fiscal Year | 2022 | 2027 | 2032 | 2037 | 2042 | CAGR |
|---|---|---|---|---|---|---|
| **Enplanements*** | 120,100 | 219,100 | 247,700 | 277,600 | 311,200 | 5% |
| **Operations** | 4,044 | 6,260 | 6,810 | 7,240 | 7,800 | 3% |
| Air Carrier | 1,308 | 3,460 | 3,860 | 4,140 | 4,800 | 7% |
| Air Taxi | 2,736 | 2,800 | 2,950 | 3,100 | 3,000 | 0% |

Source: Mead & Hunt

*Enplanement forecast assumes 85% load factor through forecast period.

## INTRODUCTION

Redding Regional Airport (RDD or the Airport) is located in the City of Redding at the northern end of the Sacramento Valley in Shasta County. Redding is the largest Californian city north of Sacramento. It serves as the Shasta County administrative center and is a regional hub for government, retail, education, and professional services. The Airport also serves as a gateway to multiple tourist attractions featuring eight national forests and 12 wilderness areas.

According to the California Department of Finance, the population of the County was 181,000 in January 2022. Economically, the U.S. Bureau of Economic Analysis recorded Shasta County having a gross domestic product (GDP) of approximately 8.7 billion dollars in 2020, and the 2020 U.S. Census noted a 2016-2020 median household income of $63,996 (adjusted to March 2022 dollars).

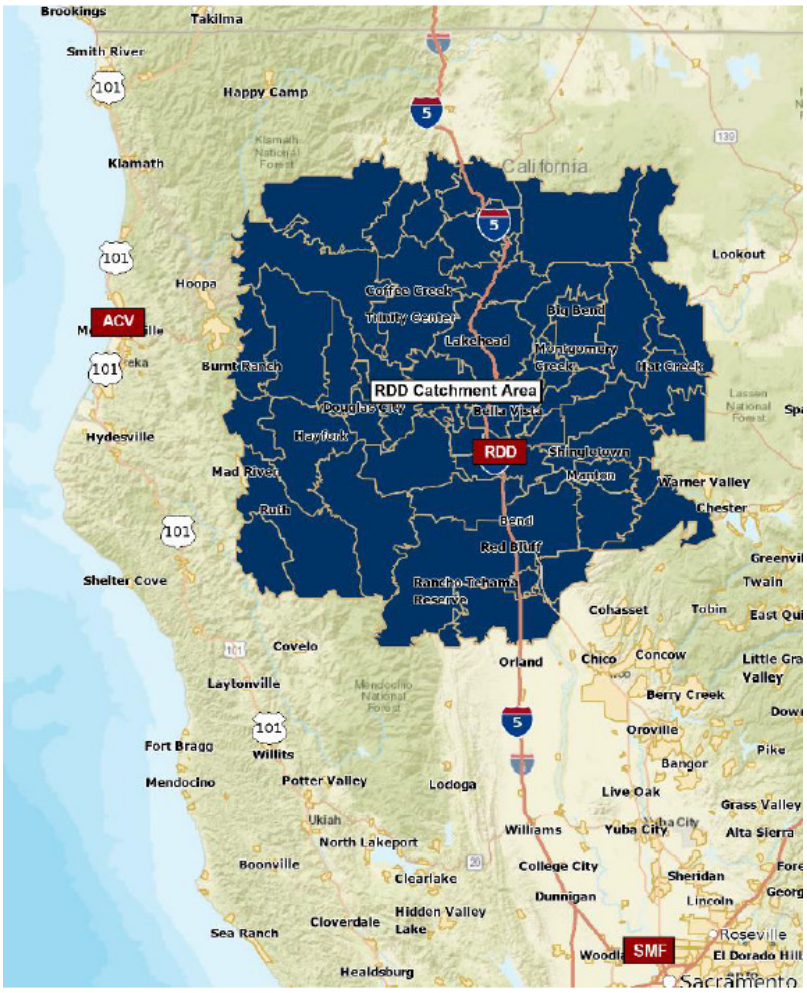
The California Department of Transportation projected the City of Redding to have the largest population growth of any city north of Sacramento between 2022 and 2050. Along with population growth the City projects aimed at economic growth such as the Stillwater Business Park which has established deals with Frito Lay, CalFire, and PACE Engineering, among others. Additionally, over 400 million dollars have been invested into revitalizing Downtown Redding. The County currently has the highest number of new businesses per capita in the state of California and experienced an increase job growth in the 2019-2021 period whereas the state on average had reported a decrease.

Starting in 2020, Shasta County experienced an increase in demand for houses. The Shasta Association of Realtors noted that demand for vacation and second homes remained elevated at the end of 2021 as sales climbed 6.6 percent, a nine-year high. This was attributed to the newer remote working policies that have been established since the beginning of the pandemic. Additional single and multi-family building projects are continuing to be developed with a reported 408 percent increase in multi-family housing construction between 2020 and 2021. This increase in real estate demand would be a contributing factor to increased aviation demand as the homeowners and residents may travel by air to and from their vacation and second homes.

RDD is a commercial service aviation facility situated on approximately 1,500 acres and is currently served by three scheduled airlines: Alaska Airlines (AS), United Airlines (UA), and Avelo Airlines (XP). Routes currently served include RDD to Seattle (SEA) on AS, to San Francisco (SFO) and Los Angeles (LAX) on UA, and to Burbank (BUR) and Las Vegas (LAS) on XP. AS serves the SEA route with the Bombardier Q400 turboprop, UA serves the LAX and SFO routes using the Mitsubishi CRJ-200 and CRJ-700, and XP operates Boeing 737-700 and -800 for the BUR and LAS routes.

The catchment area, or service area, is the area surrounding the airport that passenger traffic can be reasonably expected and representative of the local market. The catchment area contains the population of travelers who are expected to use RDD with consideration of the drive time to nearby competing airports. The population of the catchment area is RDD's focus market for air service improvements and represents most travelers using the local airport. **Figure 1-1:** shows the RDD catchment area which is comprised of 56 zip codes and a population of 279,333 as of 2021.

**Figure 1-1: RDD Catchment Area**

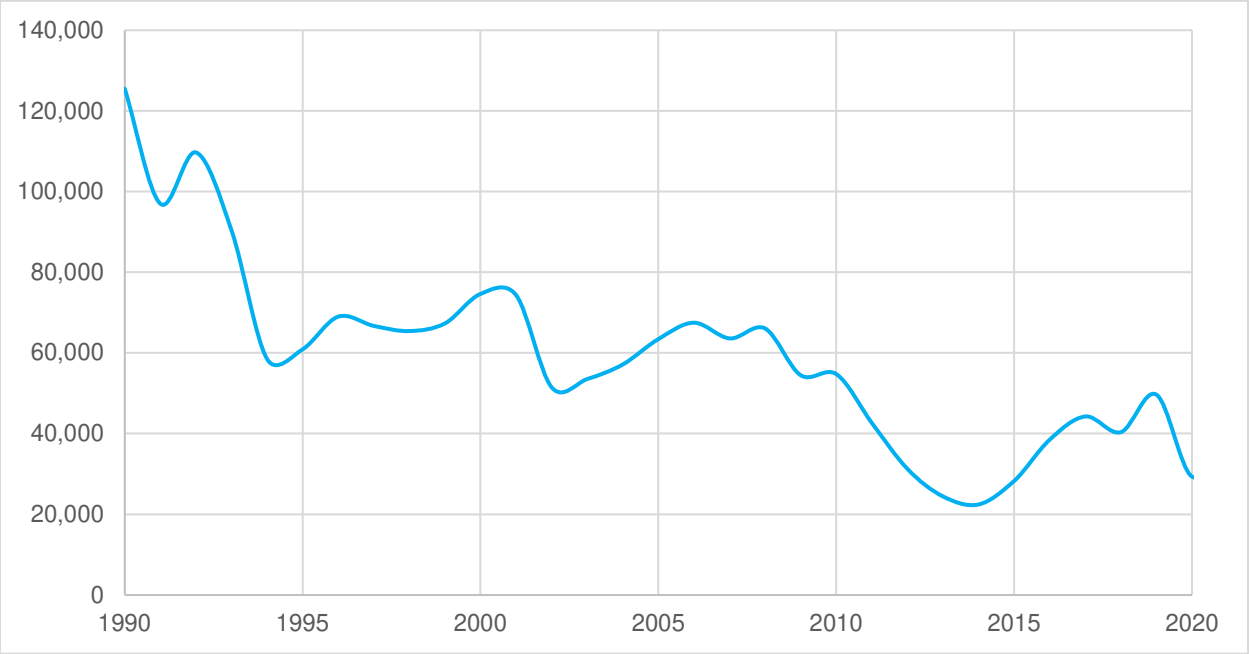



Source: RDD Passenger Demand Analysis, December 2021 (Attachment X)

The airline passenger true market for RDD was 429,512 annual origin and destination passengers in 2021, with 92 percent of these passenger traveling domestically. The true market was down by 27 percent since March 31, 2020, due to the COVID-19 pandemic; however, RDD's retention rate has increased by 10 percent over the same period. While fewer passengers are traveling overall, a higher percent of true market passengers are choosing RDD over other area airports.

In 2021, the top five markets with highest retention rates for RDD were Los Angeles, San Diego, Seattle, Phoenix, and Burbank. This true market analysis shows that RDD retains 27 percent of the true market while 73 percent of the true market uses other airports such as San Francisco (SFO) and Sacramento (SMF). Along with growth in visitation for the Los Angeles and San Diego markets, RDD has also been open to developing incentive packages such as offsetting startup costs, waiving landing fees and counter space to help foster growth in air service and in drawing airlines. The full true market analysis and methodology is included in **Attachment 1.**

**Figure 1-2: Historical Passenger Enplanement Levels at RDD**




Source: FAA Terminal Area Forecast

As shown in **Figure 1-2**, passenger enplanements at RDD have been trending down at an average annual rate of -4.7 percent between 1990 and 2020, according to data in the FAA Terminal Area Forecast (TAF). Changes brough about just before, and during, the COVID-19 pandemic have changed this trend. These changes include strong population growth in Shasta County, new airline startups on the West Coast, and growing acceptance of remote work. For these reasons, the forecasts described in this analysis are based on the 2022 air service schedule rather than past trends.

# FORECASTS

Forecasts serve as a guide for decisionmakers in planning airport development and improvement by providing future activity level estimates. Aviation demand forecasts are used to determine facility demand requirements and support the timing of demand-driven airport improvement projects. RDD is currently space constrained with baggage over capacity and a limited number of gates, which serves as a bottleneck during busy periods. Thus, this forecast assumes that the terminal building will be improved upon and be physically unconstrained to meet the demand forecast. This forecast analysis is focused on a 20-year projection of commercial passenger enplanement, operations, and peak activity at RDD. **Table 1-2**: shows the summary of the preferred forecasts.

**Table 1-2: RDD Commercial Activity Forecast Summary**

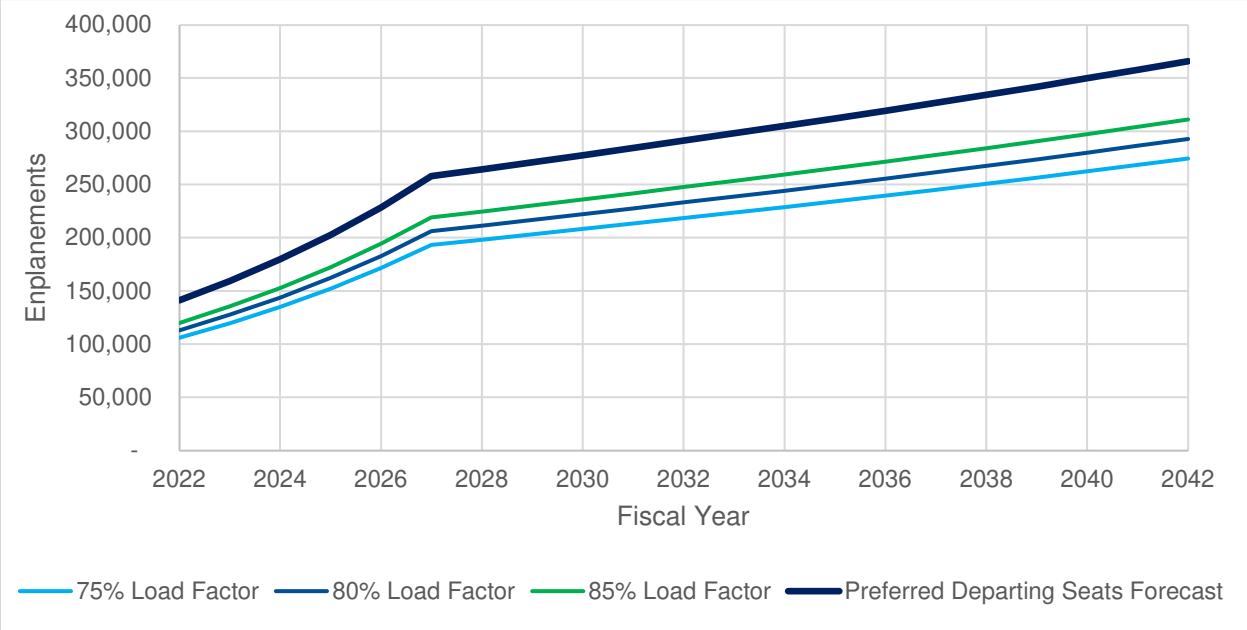
| Fiscal Year | 2022 | 2027 | 2032 | 2037 | 2042 | CAGR |
|---|---|---|---|---|---|---|
| **Enplanements*** | 120,100 | 219,100 | 247,700 | 277,600 | 311,200 | 5% |
| **Operations** | 4,044 | 6,260 | 6,810 | 7,240 | 7,800 | 3% |
| Air Carrier | 1,308 | 3,460 | 3,860 | 4,140 | 4,800 | 7% |
| Air Taxi | 2,736 | 2,800 | 2,950 | 3,100 | 3,000 | 0% |

*Enplanement forecast assumes 85% load factor through forecast period.

The RDD forecast analysis is based on the FAA fiscal year (FY) 2022 commercial air service schedule. The schedule provides information on the number of arriving and departing seats, which serve as the basis of the number of enplanements, operations, and peak activity timing. This was used to develop the baseline activity due to the lack of reliable historical data for RDD. The forecasting methods analyzed are based on the TAF for a selected peer airport located in Sonoma County, California and the TAF for the state of California.

The enplanement forecast was developed by projecting the number of departing seats and applying an average load factor. Three load factor scenarios were used in assessing future enplanements at RDD. The range of load factors (75 percent to 85 percent) was based on historical national records provided in the FAA Aerospace Forecast 2021-2041. **Figure 1-3** shows the enplanement scenarios and the preferred departing seat forecast. The preferred enplanement forecast is the 85 percent load factor scenario.

**Figure 1-3: RDD Enplanement Forecast Scenarios**




Source: Mead & Hunt

The FAA categorizes operations by aircraft seat capacity: air taxi (aircraft with fewer than 60 seats) and air carrier (aircraft with 60 or more seats). Four categories of aircraft were created based on capacity in order to develop fleet mixes for forecasting purposes: 50-, 76-, 150-, and 198-seat aircraft. These capacity categories are informed by peer airport conditions, the fleets of airlines currently operating at RDD, and

industry fleet mix trends. The forecast methodology takes the total number of arriving and departing seat projections and divides them into the seat-capacity categories to calculate the number of operations.

Overall, enplanements and operations are expected to increase during the forecast period with operations growth driven mainly by increasing air carrier operations. Enplanement growth is driven by the increase in air service at RDD, with more routes and airlines having recently started or increased service, and the expectation of continued route and frequency additions over the forecast period. The projected increase in air carrier operations is attributed to the up-gauging of aircraft as airlines continue to replace older, smaller aircraft with newer, larger aircraft.

## Enplanement Forecast

Due to RDD historically not having the current level of air service in at least the past decade, forecast methods based on historical enplanement numbers such as trend analysis or regression-based analysis are not considered reliable. To illustrate this difference, the FAA FY (October to September) 2022 air service schedule, as set by the airlines operating at RDD, expects 141,207 departing seats, while the 2021 TAF estimates 44,102 enplanements in FY 2022.

The method for forecasting enplanements at RDD first projects the number of available seats then calculates enplanements by applying a range of load factors. This creates scenario-based enplanement projections. Therefore, the initial forecasts shown in the following sections are of departing seats on scheduled passenger service operations. The load factor scenarios provide a picture of potential enplanement numbers while accounting for the uncertainty inherent in trying to predict the future.

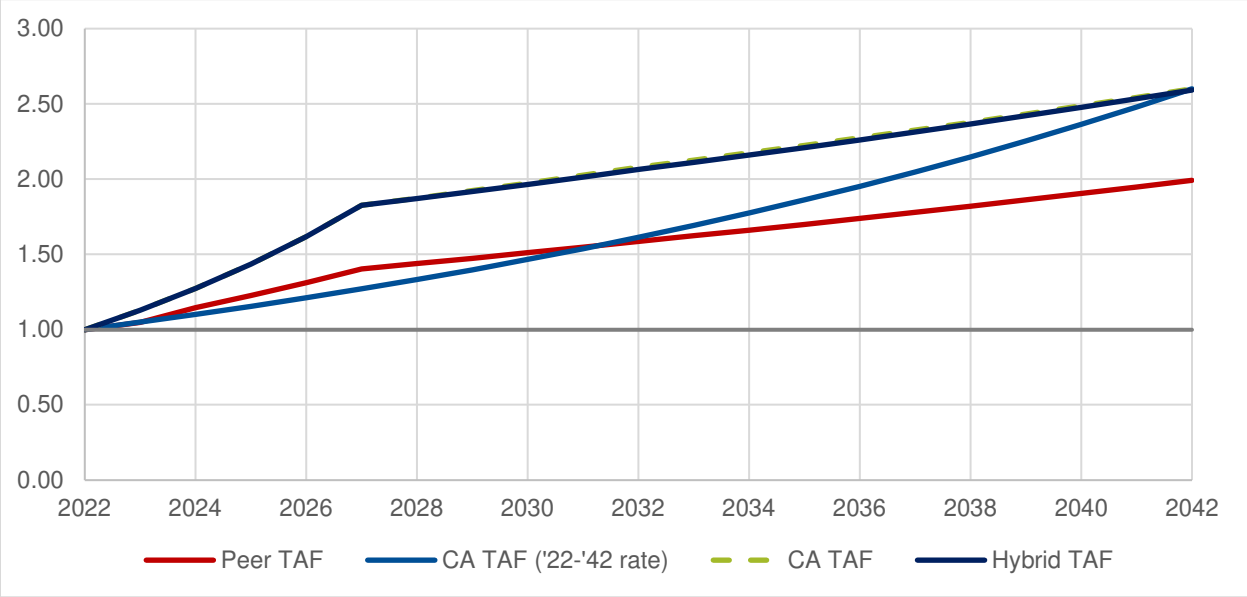
Four forecasts have been developed. Each is based on the expected level of growth based on a TAF for different geographical scopes with a more stable history of scheduled air service. These methods are:

- **Peer TAF:** This is based on a peer airport (Charles M. Schulz–Sonoma County Airport (STS)) located in Sonoma County, California. This airport was selected as a peer to RDD due to a similar distance from nearby hubs, strong recent population growth, and existing service by several airlines that serve RDD.
- **CA TAF (2022-2042 Rate):** This is based on all the airports in California and on the assumption that demand at RDD would reflect the average statewide conditions. The 2022-2042 rate uses the average annual growth rate for the 20-year period, which would result in consistent, smooth yearly changes.
- **CA TAF:** This is based on all the airports in California and on the assumption that demand at RDD would reflect the average statewide conditions. This method would use 5- to 10-year time periods for the compound annual growth rate (CAGR) in order to reflect more nuanced changes in the near-, mid-, and long-term.
- **Hybrid TAF:** This combines the Peer TAF and CA TAF growth rates by assuming that RDD enplanements would grow similarly to the state average in the near term (2022-2027) and that the mid- to long-term enplanement growth would become similar to that of the peer airport.

**Figure 1-4** shows the index of departing seats of each forecast method with 2022 as the baseline. Index charts show changes of variables relative to the baseline, which is equal to 1.0. An index greater than 1.0

indicates that the count of departing seats is above its 2022 level, and an index below 1.0 indicates that it is below its 2022 level. Note that the CA TAF and Hybrid TAF lines are overlapping due to similar values.

**Figure 1-4: 2021 TAF Indexed Average Annual Growth Rates**




Sources: 2021 FAA TAF
Note: CA TAF and Hybrid TAF lines are overlapping due to similar values.

**Table 1-3** shows the three different TAFs assessed for this forecast analysis: RDD, peer airport, and state TAF.

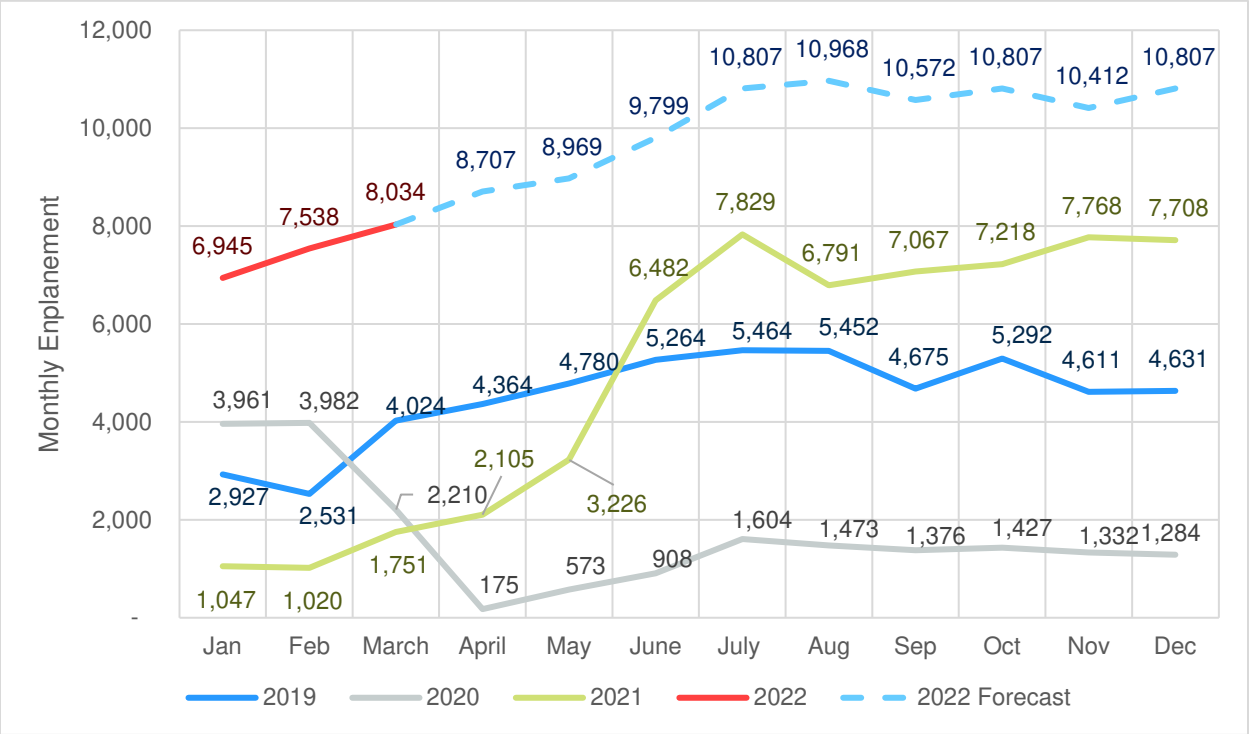
**Table 1-3: 2021 RDD, Peer Airport, and State TAF Enplanement Projections**

| FY | RDD TAF | Peer TAF Enplanements | CA TAF Enplanements |
|---|---|---|---|
| 2021 | 38,840 | 154,176 | 55,398,582 |
| 2022 | 44,102 | 192,259 | 76,511,604 |
| 2027 | 55,383 | 269,717 | 139,624,120 |
| 2032 | 56,658 | 304,923 | 159,045,077 |
| 2037 | 57,974 | 343,761 | 178,864,653 |
| 2042 | 59,320 | 383,117 | 198,899,437 |
| **CAGR** | | | |
| 2022-2027 | 5% | 7% | 13% |
| 2027-2032 | 0% | 2% | 3% |
| 2032-2042 | 1% | 2% | 2% |
| 2022-2042 | 5% | 4% | 5% |

Source: 2021 FAA TAF, Released March 2022

Compared to the current flight schedule, the 2021 RDD TAF enplanement estimates are significantly lower. Monthly enplanement records provided by RDD show that FY 2022 enplanements have already reached 45,211 by March, over 1,000 more enplanements than the total annual enplanements shown in the 2021 RDD TAF. Thus, the 2021 RDD TAF is not considered a reliable projection of enplanements and operations.

**Figure 1-5: Monthly Enplanements (CY2018-CY2022)**




Sources: RDD Enplanement Records, Obtained April 2022
CY = Calendar Year

Four different forecasts based on the 2021 FAA TAF were assessed. Each forecast used either the peer airport TAF enplanement growth rates or the CA TAF enplanement growth rates, or in some cases both. To show a better comparison against the current RDD TAF, the FY 2022 RDD flight schedule seat count was used as the 2022 base year and the RDD TAF CAGRs were applied. This displays the RDD TAF growth rate in the same scale as that of the results of each forecast method. **Table 1-4** shows the 2021 RDD TAF total enplanements against the adjusted seat count using the same CAGR.

**Table 1-4: 2021 RDD TAF Total Enplanements Adjustment**

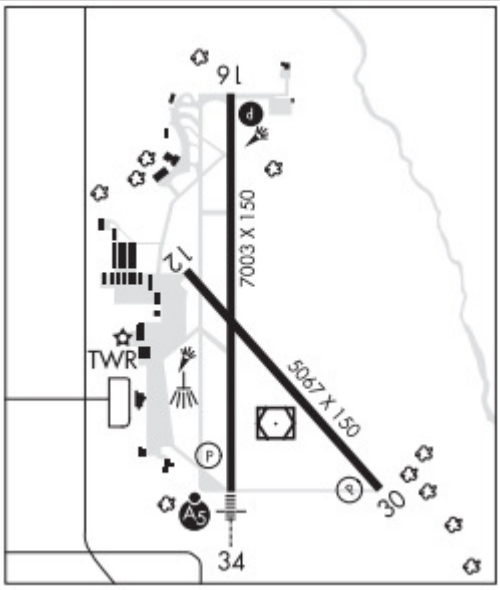
| FY | RDD TAF (Enplanements) | Adjusted (Seats)* |
|---|---|---|
| 2022 | 44,102 | 141,207 |
| 2027 | 55,383 | 177,300 |
| 2032 | 56,658 | 181,400 |
| 2037 | 57,974 | 185,600 |
| 2042 | 59,320 | 189,900 |
| **CAGR** | | |
| 2022-2042 | 1% | 1% |
| 2022-2027 | 5% | 5% |
| 2027-2032 | 0% | 0% |
| 2032-2042 | 0% | 0% |

Source: 2021 FAA TAF, Released March 2022, Diio Mi
*Adjusted using FY 2022 RDD Flight Schedule total annual seat count.

## Peer Airport Method

A peer airport is determined though examining other airports in the region with similar features including the level of air service, runway length, scheduled flight destinations, and similar distance from nearby hubs. This forecast analysis uses the Charles M. Schulz–Sonoma County Airport (STS) as the peer airport. The selection of STS as the peer airport indicates that the potential level of enplanement at RDD may reach similar levels as STS as the market at RDD becomes more established. **Table 1-5** compares the airfield, airlines, and distance to nearest hubs of RDD and STS.

**Table 1-5: RDD and Peer Airport Characteristics Comparison**

| RDD | STS |
|---|---|
|  |  |
| **Airlines** | |
| Alaska Airlines<br>United Airlines<br>Avelo Airlines | Aha! Airlines<br>Alaska Airlines<br>American Airlines<br>United Airlines<br>Avelo Airlines |
| **Distance to nearest hubs** | |
| Sacramento International (SMF) – 154 miles<br>Reno-Tahoe International (RNO) – 200 miles | Oakland International (OAK) – 69 miles<br>San Francisco International (SFO) – 76 miles |

The Peer Airport Growth Rate method breaks down the forecast into 5-year periods for the near- (2022-2027) and mid-term (2027-2032), and a 10-year period for the long-term (2032-2042). In developing the 2021 TAF, the FAA has incorporated the impacts and the expected recovery from the COVID-19 pandemic. STS's 2021 TAF projects a seven percent average annual growth rate in the near-term. In the mid-term and long-term, the enplanement CAGR at STS is two percent.

**Table 1-6** shows the RDD departing seat projections compared to the 2021 RDD TAF.

**Table 1-6: Peer Airport Method Departing Seats Forecast vs. 2021 RDD TAF**

| CY | Peer TAF Forecast | Adjusted RDD TAF | % Difference |
|---|---|---|---|
| 2022 | 141,207 | 141,207 | 0% |
| 2027 | 198,100 | 177,300 | -12% |
| 2032 | 224,000 | 181,400 | -23% |
| 2037 | 251,100 | 185,600 | -35% |
| 2042 | 281,400 | 189,900 | -48% |
| **CAGR** | | | |
| 2022-2042 | 4% | 1% | N/A |
| 2022-2027 | 7% | 5% | |
| 2027-2032 | 2% | 0% | |
| 2032-2042 | 2% | 0% | |

Source: 2021 FAA TAF, Released March 2022
Note: Adjusted RDD TAF = adjusted to reflect 2022 scheduled departing seats using 2021 RDD TAF growth rates

## California TAF Method

Two methods based on the CA TAF were assessed: one applying the 2022-2042 CAGR through the forecast period, and one using near-, mid-, and long-term CAGRs. Both methods result in the same number of departing seats by 2042; the difference between the two methods is the average annual growth rates through the forecast period. The 2021 CA TAF has a higher average annual rate of growth when compared to the Peer Airport TAF.

The 2022-2042 CAGR method assumes a consistent growth rate of five percent through the forecast period. This method does not account for additional air service, establishment of new routes by airlines, or other events that may alter the growth rate. **Table 1-7** shows the 2022-2042 CA TAF rate method forecast results compared to the RDD TAF.

**Table 1-7: California TAF (2022-2042 Rate) Method Departing Seats Forecast vs. 2021 RDD TAF**

| CY | CA TAF ('22-'42 rate) Forecast | Adjusted RDD TAF | % Difference |
|---|---|---|---|
| 2022 | 141,207 | 141,207 | 0% |
| 2027 | 179,400 | 177,300 | -1% |
| 2032 | 227,700 | 181,400 | -26% |
| 2037 | 289,100 | 185,600 | -56% |
| 2042 | 367,100 | 189,900 | -93% |
| **CAGR** | | | |
| 2022-2042 | 5% | 1% | N/A |
| 2022-2027 | 5% | 5% | |
| 2027-2032 | 5% | 0% | |
| 2032-2042 | 5% | 0% | |

Source: 2021 FAA TAF, Released March 2022
Note: Adjusted RDD TAF = adjusted to reflect 2022 scheduled departing seats using 2021 RDD TAF growth rates

The second method based on the CA TAF uses CAGR for different time periods like the Peer Airport Growth Rate Method. This method breaks the forecast period into five-year periods for the near- (2022-2027) and mid-term (2027-2032), and a 10-year period for the long-term (2032-2042). The same time periods are used to calculate the CAGR from the CA TAF. These growth rates are then applied to the RDD departing seats for 2022 onwards. This method includes a period of strong growth in the near-term with mid- to long-term growth slowing down. **Table 1-8** shows the differences between CA TAF method forecast results and the RDD TAF.

**Table 1-8: California TAF Method Departing Seats Forecast vs. 2021 RDD TAF**

| CY | CA TAF Forecast | Adjusted RDD TAF | % Difference |
|---|---|---|---|
| 2022 | 141,207 | 141,207 | 0% |
| 2027 | 257,700 | 177,300 | -45% |
| 2032 | 293,600 | 181,400 | -62% |
| 2037 | 328,300 | 185,600 | -77% |
| 2042 | 367,100 | 189,900 | -93% |
| **CAGR** | | | |
| 2022-2042 | 5% | 1% | N/A |
| 2022-2027 | 13% | 5% | |
| 2027-2032 | 3% | 0% | |
| 2032-2042 | 2% | 0% | |

Source: 2021 FAA TAF, Released March 2022
Note: Adjusted RDD TAF = adjusted to reflect 2022 scheduled departing seats using 2021 RDD TAF growth rates

## Hybrid TAF Method

The Hybrid TAF method utilizes growth rates from both the Peer Airport and CA TAFs. The near-term 2022 to 2027 projections are based on the higher CAGR of the state TAF of the same period. The combination of new passengers utilizing the new air service and the rebound from COVID-19 drives the strong near-term growth forecasts. In the mid- to long-term, the peer airport's CAGRs for the 2027 to 2032 and 2032 to 2042 ranges are applied. The two five-year growth rates are used instead of a fixed 10-year growth rate to allow more for nuanced and focused projections. Rather than assume enplanements after 2027 would remain constant for the next 15 years, the mid-term and the long-term forecast periods are separated to project the gradual maturation of air service at RDD. **Table 1-9** contains the hybrid forecast results with the RDD TAF for comparison.

**Table 1-9: Hybrid Method Departing Seats Forecast vs. 2021 RDD TAF**

| CY | Hybrid Forecast | Adjusted RDD TAF | % Difference |
|---|---|---|---|
| 2022 | 141,207 | 141,207 | 0% |
| 2027 | 257,700 | 177,300 | -45% |
| 2032 | 291,400 | 181,400 | -61% |
| 2037 | 326,600 | 185,600 | -76% |
| 2042 | 366,100 | 189,900 | -93% |
| **CAGR** | | | |
| 2022-2042 | 5% | 1% | N/A |
| 2022-2027 | 13% | 5% | |
| 2027-2032 | 2% | 0% | |
| 2032-2042 | 2% | 0% | |

Source: 2021 FAA TAF, Released March 2022
Note: Adjusted RDD TAF = adjusted to reflect 2022 scheduled departing seats using 2021 RDD TAF growth rates

## Forecast Methods Comparison and Preferred Enplanement Forecast

The hybrid method results in the highest 20-year CAGR with 383,200 departing seats projected for 2042. This method is the preferred method as it incorporates both the state and peer airport conditions. The state TAF's stronger post-COVID-19 growth would more suitably reflect the growth of available seats the newly established services would have in comparison to the peer airport method, which is developed for an airport with more established service. This characteristic, in turn, is suitable to model the mid- to long-term departing seats as RDD air service matures.

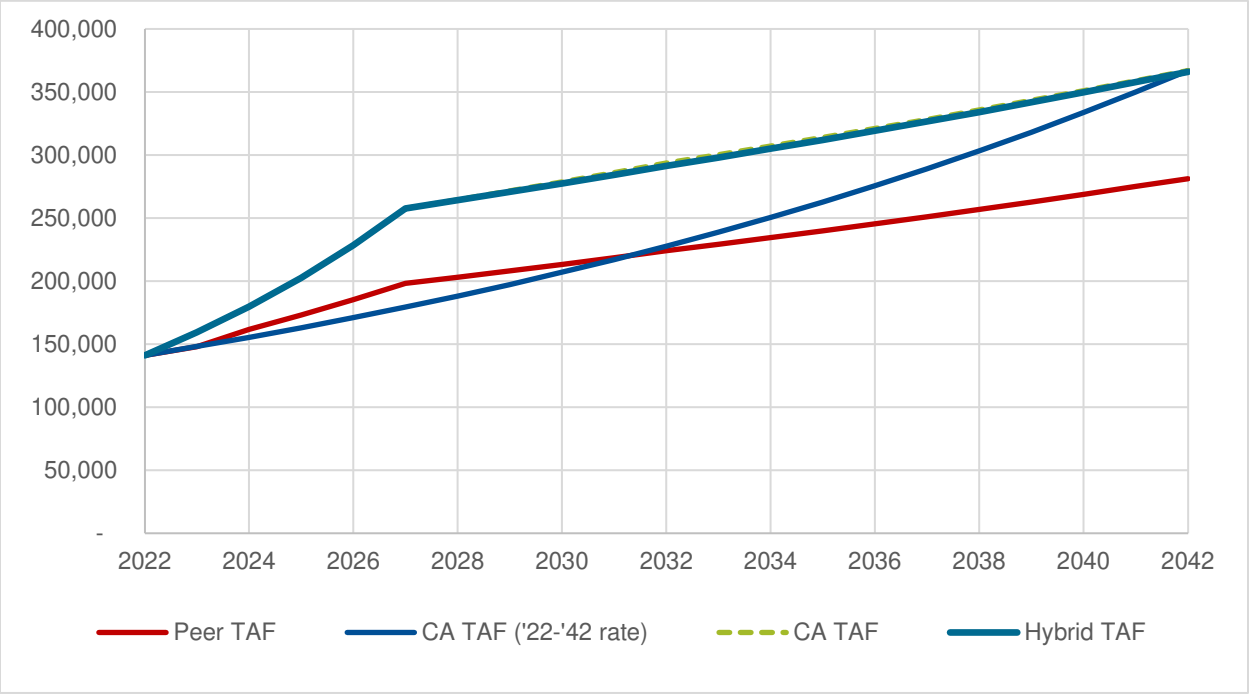
**Table 1-10** and **Figure 1-6** show the results of each of the four forecasts and compares the results of all four forecasting methods assessed. Note that the CA TAF and Hybrid TAF lines in the figure are overlapping.

**Table 1-10: RDD Departing Seats Forecasts by Method**

| FY | Peer TAF | CA TAF ('22-'42 rate) | CA TAF | Hybrid |
|---|---|---|---|---|
| 2022 | 141,207 | 141,207 | 141,207 | 141,207 |
| 2027 | 198,100 | 179,400 | 257,700 | 257,700 |
| 2032 | 224,000 | 227,700 | 293,600 | 291,400 |
| 2037 | 251,100 | 289,100 | 328,300 | 326,600 |
| 2042 | 281,400 | 367,100 | 367,100 | 366,100 |
| **CAGR** | | | | |
| 2022-2042 | 4% | 5% | 5% | 5% |
| 2022-2027 | 7% | 5% | 13% | 13% |
| 2027-2032 | 2% | 5% | 3% | 2% |
| 2032-2042 | 2% | 5% | 2% | 2% |

Source: Diio Mi (2022 Departing seats)
Note the departing seats are presented in calendar year as the seat schedule data is presented in CY.
Note: Adjusted RDD TAF = adjusted to reflect 2022 scheduled departing seats using 2021 RDD TAF growth rates

**Figure 1-6: Comparison of RDD Departing Seat Forecasts (2022-2042)**




Source: Mead & Hunt

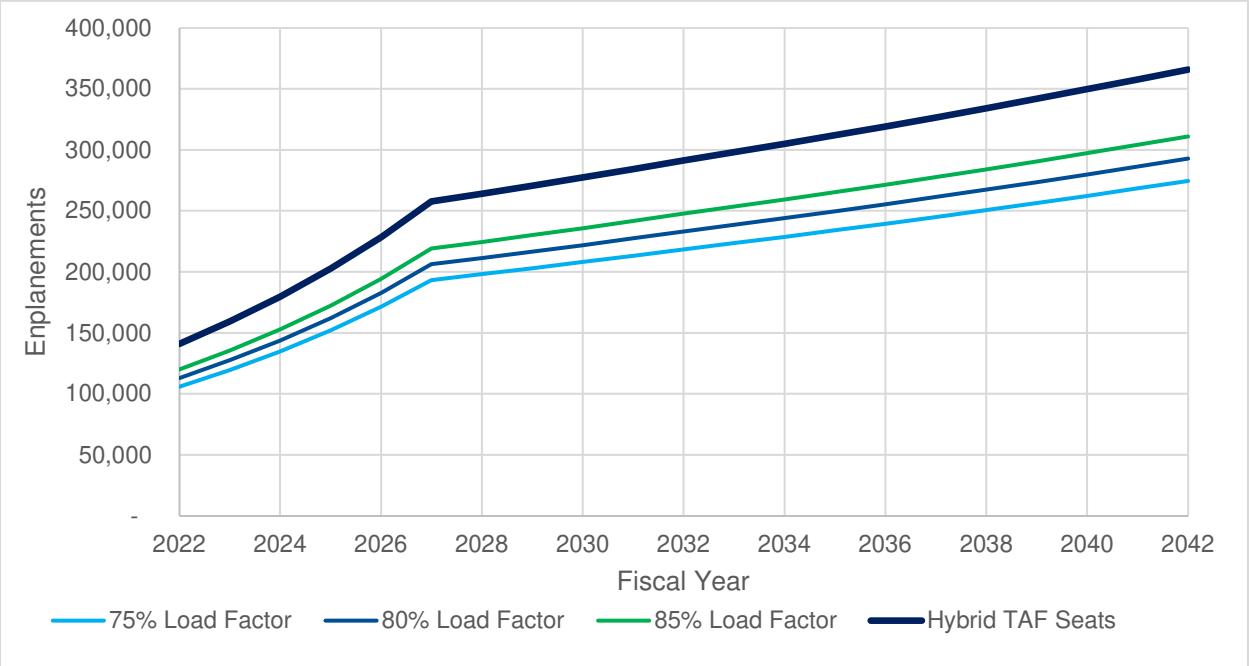
## Enplanement Forecast

Enplanements are calculated by multiplying the forecast number of departing seats with a range of load factors. Using a range of load factors accounts for uncertainty as load factors may vary through time and across routes. The load factor scenarios analyzed range from 75 percent to 85 percent.

Historically, the average load factor for domestic U.S. commercial air carriers (a sum of mainline and regional air carriers) between 2010 and 2019 range from 80 to 85 percent, as reported in the FAA Aerospace Forecast 2021-2041 (FAA ASF). The 75 percent load factor scenario was included to represent a conservative forecast scenario and is based on the historical U.S. regional air carrier load factors between 2010 and 2019.

**Figure 1-7** shows the forecasted enplanements from the hybrid forecast based on load factor. The 85 percent load factor results in an estimated 325,700 enplanements while the 75 percent load factor results in 287,400 enplanements. This graph assumes a consistent load factor through the forecast period.

**Figure 1-7: Hybrid Forecast Enplanements by Average Load Factor**




Source: Mead & Hunt

# SCHEDULED SERVICE OPERATIONS FORECAST

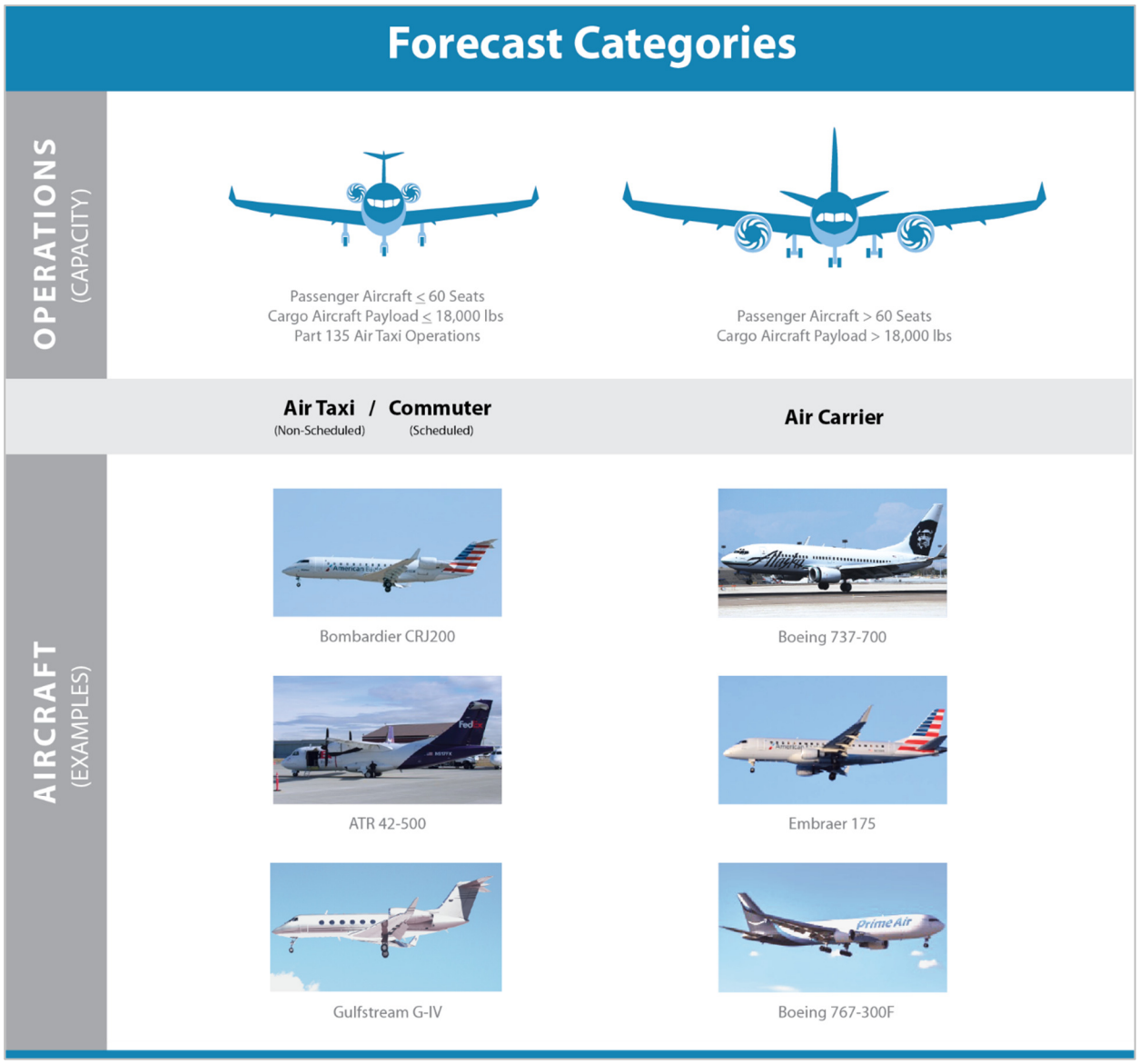
Commercial aircraft operations are performed by scheduled and charter passenger airlines, cargo aircraft, and Part 135 on-demand air taxi operations. Private business jet operations are counted as general aviation operations rather than commercial operations. This forecast focuses on scheduled passenger airline operations and does not include cargo, charger, and air taxi operations.

The FAA splits commercial operations into two categories; however, it is based on capacity rather than operator type.

- **Air carrier operations:** Takeoffs or landings of commercial aircraft with more than 60 seats and air cargo operations with a maximum payload of 18,000 pounds and more.
- **Air taxi operations:** Takeoffs and landings by commercial aircraft with 59 and fewer seats, and air cargo operations with a maximum payload of less than 18,000 pounds.

**Figure 1-8** shows examples of aircraft as categorized by this definition of operation type.

**Figure 1-8: Commercial Aircraft Operation Categories**




Source: Mead & Hunt, Inc.

The operations forecast was calculated using the flight schedule and the preferred departing seats forecast. The FY 2022 schedule of departures by aircraft type was used to create the baseline of 654 departing air carrier operations and 1,368 air taxi operations for a total of 2,022 departures in FY 2022. Departures are doubled to calculate total scheduled commercial operations.

## Air Taxi Operations

Air taxi operations at RDD are expected to remain stable through the forecast period. Industry trends indicate airline fleets are moving towards preferring larger aircraft with 76 or more seats due to maintenance costs, pilot shortages, and aircraft age. Air taxi operations at RDD are projected to remain steady based on assessing conditions at the peer airport and the national level. The peer airport TAF indicated a positive CAGR for air taxi operations of 0.88 percent between 2022 and 2042. Nationally, the FAA ASF indicates a 1.4 percent growth in the number of 40+ seat passenger aircraft between 2021 and 2041 for U.S. regional carriers.

Locally, SkyWest, which operates United Express routes for United Airlines at RDD, currently has over 100 CRJ-200s in service for United Express. Due to SkyWest being a regional airline subject to scope clause requirements of its mainline partners and pilot unions, any up-gauging of the 50-seat aircraft operating at RDD would likely utilize the Embraer 175 and would require SkyWest to obtain additional aircraft to replace the CRJ-200. Thus, air taxi operations at RDD are not expected to increase significantly through the forecast period through 2037 before decreasing in 2042 to reflect aircraft retirement and up-gauging.

## Air Carrier Operations

The air taxi operations were forecasted before forecasting the air carrier operations. This method allows for air carrier operations to be back calculated using the preferred departing seat forecast and the air taxi operations forecast. This is possible as the only scheduled air taxi operations at RDD are operated using the 50-seat CRJ-200; thus, all air taxi flights are assumed to have 50 seats. The following equations illustrate the method used to determine air carrier operations for each forecast year:

1 $$Air\ Taxi\ Operations\ \times 50\ seats = Total\ \ Air\ Taxi\ Seats$$

2 $$Forecasted\ Seats\ -\ Total\ Air\ Taxi\ \ Seats = Total\ Air\ Carrier\ Seats$$

3 $$Air\ Carrier\ Seats\ \div\ Average\ Air\ Carrier\ Seats\ per\ Aircraft = Air\ Carrier\ Operations$$

The current air carrier operations fleet mix was obtained using the flight schedule and a weighted average number of seats was calculated. The operations fleet mix divided annual operations per aircraft by total operations by all aircraft with greater than 60 seats. The operations fleet mix serves as the basis of step three of the forecasting method. Information about each operator and their current and future fleet mixes was incorporated into the analysis along with general trends in airline fleet mixes. The following assumptions were used in this forecast:

- The United Express 70-seat CRJ-700 will be transferred to United Express operator GoJet to be converted to CRJ-550s. Skywest will replace these aircraft with 76-seat Embraer 175s.
- Avelo is adding more 737s to its fleet and it was assumed that they will continue operating aircraft with similar seat capacity into the future.

- The regional and mainline airlines will be slow to add aircraft with greater than 76 seats to the RDD market in the next 10 years. Larger aircraft operated by low-cost carriers are expected to be the main source of aircraft with more than 76 seats at RDD.
- The 150-seat aircraft represents an average between the narrow-body, 76-seat aircraft operated by regional airlines and the 198-seat 737-800 operated by Avelo. Aircraft such as the Airbus A319 and the 737 MAX 7 are aircraft with approximately 150-seats operated by low-cost carriers.

**Table 1-11** shows the forecasted weighted average number of seats. This was estimated using air carrier operations fleet mix by percentages based on a combination of the 2022 flight schedule, current airline fleets mixes, and industry trends in airline aircraft orders. This information was used in the third step of the calculations.

**Table 1-11: RDD Air Carrier Operations Fleet Mix Forecast and Average Air Carrier Seats**

| FY | Average Air Carrier Seats |
|---|---|
| 2022 | 112 |
| 2027 | 108 |
| 2032 | 113 |
| 2037 | 120 |
| 2042 | 121 |

Source: Mead & Hunt

The forecast result shows high growth in air carrier operations in the near-term. This is due to the increase in air carrier operations at RDD between 2022 and 2027 as new routes would be expected to be served by 76-seat aircraft such as the Embraer 175 while other flights are up-gauged from 50-seat aircraft. **Table 1-12** shows the scheduled passenger operations forecast result.

**Table 1-12: Scheduled Passenger Operation Forecast**

| FY | Air Carrier | Air Taxi | Total Operations |
|---|---|---|---|
| 2022 | 1,308 | 2,736 | 4,044 |
| 2027 | 3,460 | 2,800 | 6,260 |
| 2032 | 3,860 | 2,950 | 6,810 |
| 2037 | 4,140 | 3,100 | 7,240 |
| 2042 | 4,800 | 3,000 | 7,800 |
| **CAGR** | | | |
| 2022-2042 | 7% | 0% | 3% |
| 2022-2027 | 21% | 0% | 9% |
| 2027-2032 | 2% | 1% | 2% |
| 2032-2042 | 2% | 0% | 1% |

Source: Mead & Hunt

# PEAK PERIOD OPERATIONS

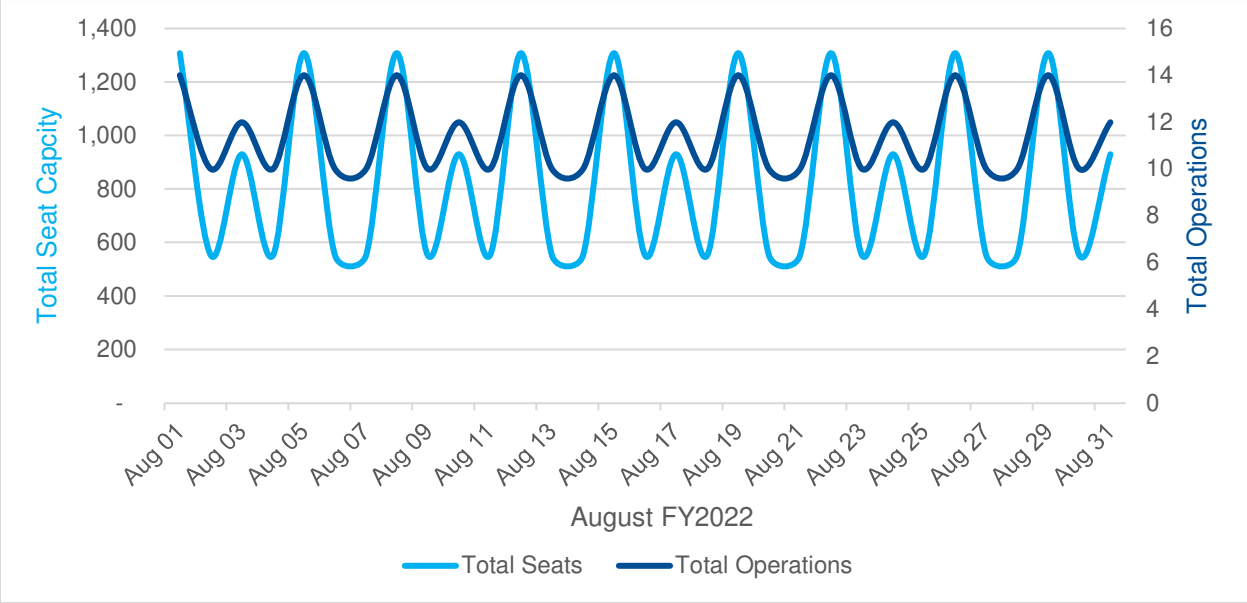
Peak period forecasts estimate when airport facilities will be the busiest. Peak period information is used to determine the capacity needs for airfield and terminal facilities and determine the scope of improvement projects. Improvement projects are not typically designed for the busiest day of the year specifically, as such a design would lead to over-building.

The peak period forecast for RDD scheduled service was completed using the currently available flight schedule; thus, peak forecasts should be reevaluated if changes in user or aircraft type occur, such as the addition of new service routes or airlines.

The peak month was determined through evaluating the percent of operations and seat capacity of each month in FY 2022, with July and August being the busiest months of the year. August was determined to be the peak month with 8.80 percent of total annual operations and 9.14 percent of total annual seat capacity at RDD. July would be the second busiest month with 8.75 percent of total annual operations and 9 percent of total annual seat capacity. The peak month of August and the runner-up of July indicate that the peak coincides with summer break from schools as families tend to travel together.

The flight schedule for August FY 2022 indicated a cycle of busy days through the week in which Mondays and Fridays, the sum of which results in 46 percent of total monthly seat capacity. The same dates also contain the weekly high of four percent of total monthly operations, or 35 percent of total operations in August FY 2022. Thus, the peak day of August FY 2022 is determined to have five percent of monthly passengers and four percent of operations. **Figure 1-9** shows the weekly cycle of seat capacity and operations at RDD scheduled for August FY 2022 (note the scale of the two axes).

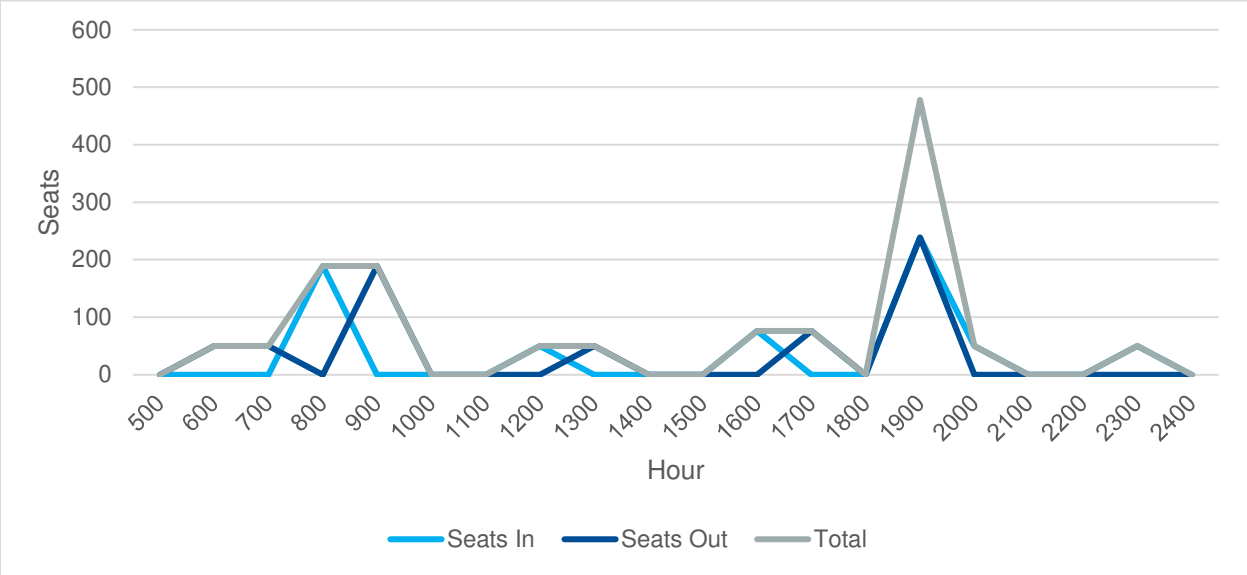
**Figure 1-9: Daily Total Seat Capacity and Operations (August FY2022)**




Source: DiioMi

The peak hour was then determined using the flight schedule for one of the busy days in August FY 2022. This schedule, shown in **Figure 1-10**, indicated 37 percent of total seats departing and arriving in RDD occur at 1900 hours (7PM) with two arrivals and two departures occurring within the hour. This peak is driven by the four operations (29 percent of total daily operations) occurring in a close time frame as well as the two of the operations involving the 189-seat 737-800. This results in enplanement and deplanement peak factor percentages being identical.

**Figure 1-10: Hourly Seat Capacity on a Busy Day in August 2022**




Source: DiioMi

**Table 1-13** shows the forecasted peak periods for passengers and operations through 2042. This peak activity analysis and forecast assumes a preferred forecast load factor of 85 percent for all enplanements and deplanements.

**Table 1-13: RDD Peak Period Forecasts**

| Period | Factor | 2022 | 2027 | 2032 | 2037 | 2042 |
|---|---|---|---|---|---|---|
| **Enplanements and Deplanements** | | | | | | |
| Annual | 100% | 120,100 | 219,100 | 247,700 | 277,600 | 311,200 |
| Peak Month | 9% | 11,000 | 20,000 | 23,000 | 25,000 | 28,000 |
| Peak Day | 5% | 560 | 1,010 | 1,170 | 1,270 | 1,420 |
| Peak Hour - Enplanements | 37% | 200 | 370 | 430 | 460 | 520 |
| Peak Hour - Deplanements | 37% | 200 | 370 | 430 | 460 | 520 |
| **Total Passengers** | | | | | | |
| Annual | 100% | 240,200 | 438,200 | 495,400 | 555,200 | 622,400 |
| Peak Month | 9% | 22,000 | 40,000 | 46,000 | 50,000 | 56,000 |
| Peak Day | 5% | 1,120 | 2,020 | 2,340 | 2,540 | 2,840 |
| Peak Hour | 37% | 400 | 740 | 860 | 920 | 1,040 |
| **Aircraft Operations** | | | | | | |
| Annual | 100% | 4,044 | 6,261 | 6,807 | 7,241 | 7,796 |
| Peak Month | 9% | 360 | 550 | 600 | 640 | 690 |
| Peak Day | 4% | 14 | 22 | 24 | 25 | 27 |
| Peak Hour* | 29% | 4 | 6 | 7 | 7 | 8 |

Source: Mead & Hunt

# FORECAST SUMMARY

Highlights of the RDD enplanement and scheduled passenger service operations forecast are as follows:

- The 2022 flight service schedule served as the basis of this forecast due to the lack of availability of reliable historical passenger enplanement and commercial operations data.
- The number of annual departing seats was forecasted using the hybrid method that takes the near-term growth rate of the CA TAF and the mid- and long-term growth rates of the Peer Airport TAF. Passenger enplanements are calculated by applying three load factor scenarios (75, 80, and 85 percent) to projections of total departing seats.
- Enplanements are expected to increase at an average annual rate of five percent between 2022 and 2042. The preferred load factor for forecasting purposes is 85 percent.
- Commercial operations are expected to increase with the increasing enplanements expected to be accommodated using larger aircraft. As a result, air carrier operations are projected to increase an average of seven percent through the forecast period. Air taxi operations are expected to remain stable through the same period.
- Peak operations and peak passenger enplanement and deplanement occur in August FY 2022, coinciding with families traveling during summer break for schools.

**Table 1-14** summarizes the results of the enplanement and operations forecasts.

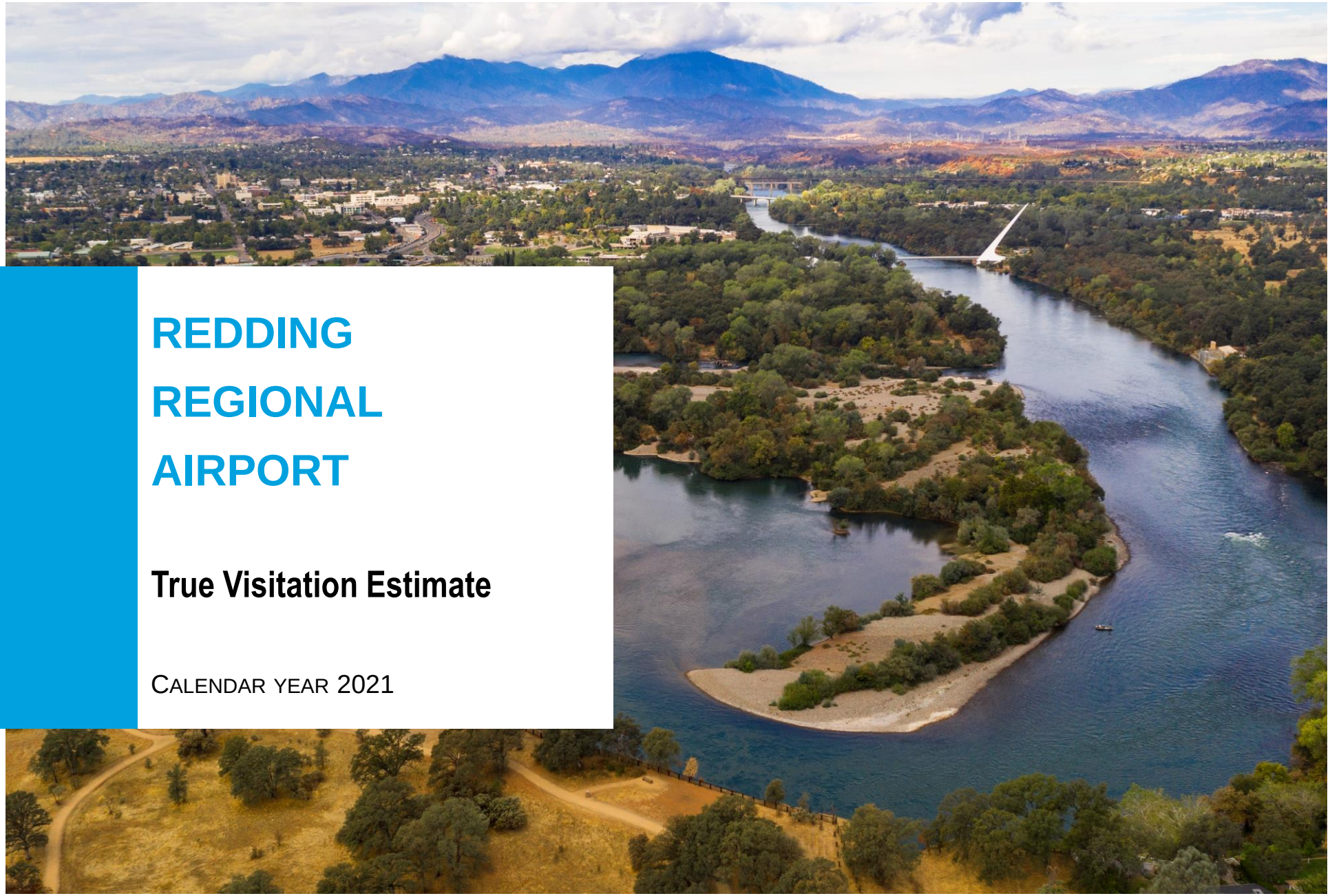
**Table 1-14: Enplanement and Operations Forecast Summary**

| Fiscal Year | 2022 | 2027 | 2032 | 2037 | 2042 | CAGR |
|---|---|---|---|---|---|---|
| **Enplanements*** | 120,100 | 219,100 | 247,700 | 277,600 | 311,200 | 5% |
| **Operations** | 4,044 | 6,260 | 6,810 | 7,240 | 7,800 | 3% |
| Air Carrier | 1,308 | 3,460 | 3,860 | 4,140 | 4,800 | 7% |
| Air Taxi | 2,736 | 2,800 | 2,950 | 3,100 | 3,000 | 0% |

Source: Mead & Hunt

*Enplanement forecast assumes 85% load factor through forecast period.

# ATTACHMENT 1



# REDDING REGIONAL AIRPORT

## True Visitation Estimate

CALENDAR YEAR 2021

Mead & Hunt

CONTENTS

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# INTRODUCTION & METHODOLOGY

## INTRODUCTION


The *True Visitation Estimate* is a location-based demand analysis, using the strength of the destination's overall visitation as the foundation for identifying air service development opportunities. The *True Visitation Estimate* differs from traditional retention/diversion studies in that it uses location-based cell phone Global Positioning System (GPS) data. The *True Visitation Estimate* does not use airline data but uses GPS data to track movements and unique data points, providing a level of detail unparalleled in the aviation industry.

The *True Visitation Estimate* identifies visitor travel patterns and estimates the number of people coming to the destination. The findings can be used by the Redding Regional Airport (RDD) and its community partners for ongoing air service development efforts and to amplify its advertising and business development strategies. The findings can also assist RDD and its community partners in developing a data-driven unified air service development strategy.

## METHODOLOGY

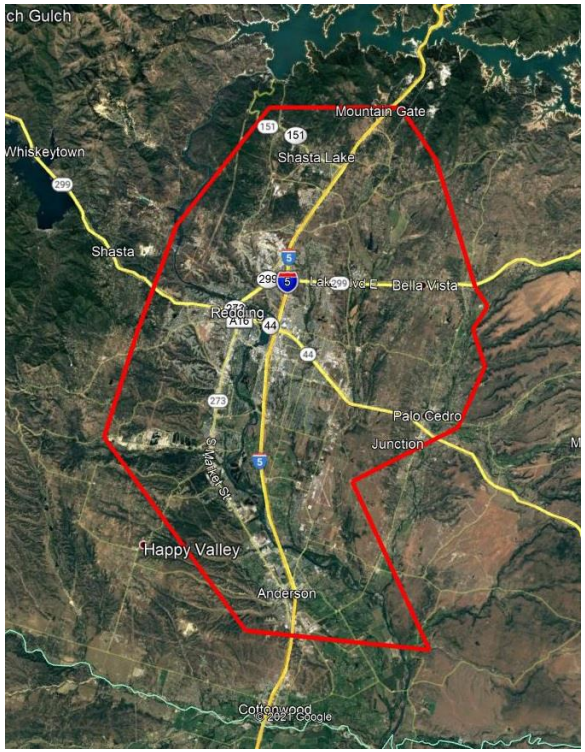
The *True Visitation Estimate* uses GPS data collected from mobile devices. This location-based data is aggregated from a variety of sources into a single contextualized dataset, with a high level of accuracy. Data for the *True Visitation Estimate* was acquired from a mobile data analytics company that collects data from a broad spectrum of mobile applications. Mobile data does not track devices 100 percent of the time. Locations are only given when the device is connected to data, whether it be cellular or Wi-Fi. The identity of the device owner is not available and never disclosed.

*A significant portion of the Redding area's visitation comes from locations within 100 miles of the Redding area. The True Visitation Estimate reviews visitors beyond 100 miles from Redding.*

The GPS data identifies where the device's "home" or "origin" is located. It represents the location where the device is most frequently observed in the evenings and on weekends over a duration of time. Data for the *True Visitation Estimate* was acquired for a specific geographic area and includes the Redding metro area (**Exhibit 1.1**). This assumes all visitors to the Redding area will at some point during their journey visit the study area. Visitors include people coming to the Redding area for business and/or leisure.

The study reviews calendar year 2021 compared to calendar years 2019 and 2020. A significant portion of the Redding area's visitation comes from locations within 100 miles of the Redding area, a distance that visitors will most likely continue to drive versus fly to the area. Because of this, the *True Visitation Estimate* reviews visitors beyond 100 miles from the Redding area.

**EXHIBIT 1.1 GPS DATA STUDY AREA**



# EXECUTIVE SUMMARY

## METHODOLOGY

GPS-based tracking data from smartphone devices was combined with data from other travel-related databases to create a true visitation estimate to quantify the visitation to the Redding area. The true visitation estimate includes all travel by any form of transportation (e.g., car, bus and aircraft). The analysis focuses on calendar year 2021 with comparisons to calendar years 2019 and 2020. Schedule data is sourced from Diio Mi as of February 27, 2022.

## TRUE VISITATION ESTIMATE

Visitation to the Redding area was estimated at nearly 2.2 million visits in 2021 from beyond 100 miles, the focus of this analysis. Due to the pandemic, visitation remained down 9 percent from 2019 but improved 17 percent over 2020 that had the most significant impact from the pandemic. Visitation remained down compared to 2019 in every month except for April whereas visitation improved in every month of 2021 over 2020, except for January, February, September and October.

The Redding area's visitation is somewhat summer seasonal, with 34 percent of visitation in 2021 occurring from June to August, up from 31 percent in 2019. July was the peak month for visitation, similar to the 2019 and 2020 peak months. February was the lowest month for visitation in 2021 compared to January being the lowest month in 2019 and April being the lowest month in 2020. The busiest days for visitation in 2021 was Friday and Saturday, similar to 2019.

## TRUE VISITATION BY REGION

The West region was the largest region for visitation to the Redding area, generating more than 1.4 million visits in 2021 and was the only region to have increased visitation since 2019. The Northwest region was the second largest region for visitation to the Redding area, generating nearly 555,000 visits in 2021, down 18 percent since 2019. Combined, the West and Northwest regions accounted for 91 percent of visitation to the Redding area. The Great Lakes region was the third largest region with more than 53,000 visits, followed by the Southwest, Southeast, East, Central, Northeast and Alaska regions. The East region had the highest percentage decline in visits to the Redding area, decreasing 45 percent since 2019.

## TRUE VISITATION BY MSA

The Sacramento-Roseville-Arden-Arcade Metropolitan Statistical Area (MSA) generated the most visits to the Redding area in 2021 from visitors more than 100 miles distant, with nearly 263,000 visits. Visitation from the Sacramento MSA was down 6 percent since 2019. The San Francisco-Oakland-Hayward MSA was the second largest MSA for visitation to the Redding area with more than 208,000 visits in 2021 and increased 18 percent since 2019. The Los Angeles-Long Beach-Anaheim, Seattle-Tacoma-Bellevue and Portland-Vancouver-Hillsboro MSAs rounded out the top five MSAs for visitation to the Redding area, with three of the top four MSAs having nonstop service from RDD.

The top air service development priority for RDD is supporting existing air service. As business and leisure demand continues to return, top opportunities for markets not currently served include the following MSAs by highest visitation to lowest:

- Portland-Vancouver-Hillsboro
- Phoenix-Mesa-Scottsdale
- San Diego-Carlsbad
- Denver-Aurora-Lakewood

# TRUE VISITATION ESTIMATE

This section provides the estimated visitation on an aggregated basis for the Redding area. This section breaks down the true visitation by year, month, season and day-of-week.

## VISITATION BY MONTH/YEAR

**Table 3.1** summarizes the estimated number of visitors for calendar year 2021 compared to calendar years 2019 and 2020 for visitation from beyond 100 miles from the Redding area. In 2021, the Redding area had nearly 2.2 million annual visits. Calendar year 2021 surpassed calendar year 2020 visitation by 17 percent, with 2020 visitation greatly impacted by COVID-19. Visitation remained down in 2021 over 2020 in four months, including January, February, September and October. Visitation was down compared to 2019 by 9 percent, decreasing in every month except for April; however, many months had decreases of less than 5 percent.

**TABLE 3.1 VISITATION BY MONTH/YEAR - BEYOND 100 MILES**

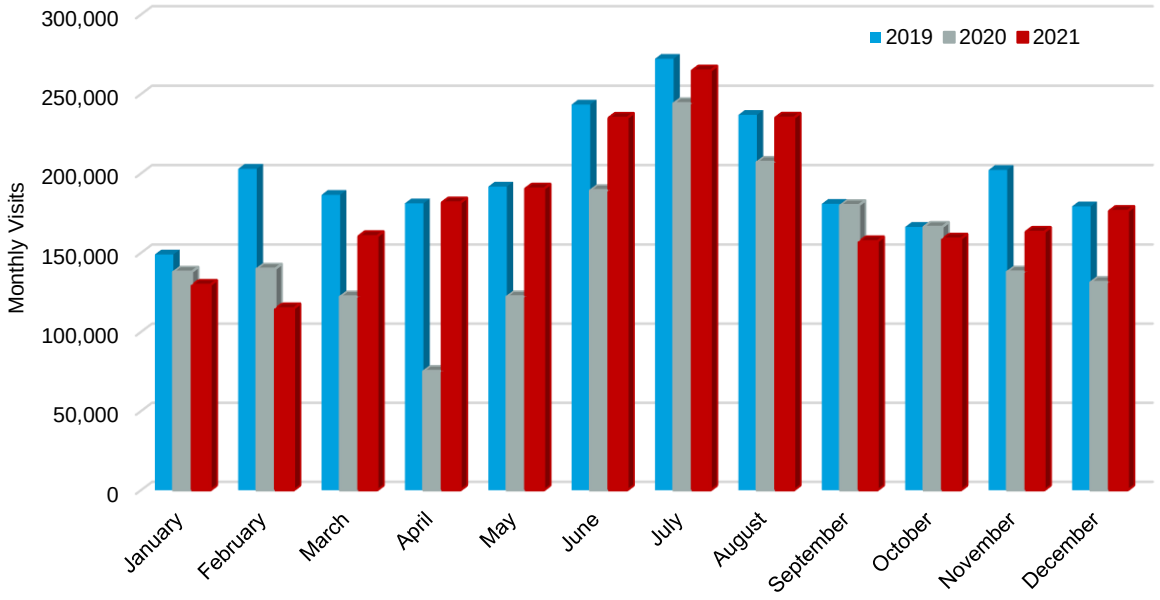
| MONTH | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| January | 129,735 | 138,056 | 149,019 | (8,321) | (6%) | (19,284) | (13%) |
| February | 114,872 | 139,946 | 202,937 | (25,074) | (18%) | (88,065) | (43%) |
| March | 160,454 | 122,380 | 186,518 | 38,074 | 31% | (26,064) | (14%) |
| April | 181,663 | 75,291 | 181,197 | 106,372 | 141% | 466 | 0% |
| May | 190,401 | 122,440 | 191,753 | 67,961 | 56% | (1,352) | (1%) |
| June | 235,000 | 189,424 | 243,416 | 45,576 | 24% | (8,416) | (3%) |
| July | 264,772 | 244,187 | 272,196 | 20,585 | 8% | (7,424) | (3%) |
| August | 235,068 | 207,255 | 236,901 | 27,813 | 13% | (1,833) | (1%) |
| September | 157,246 | 180,049 | 180,874 | (22,803) | (13%) | (23,628) | (13%) |
| October | 158,909 | 166,312 | 166,370 | (7,403) | (4%) | (7,461) | (4%) |
| November | 163,164 | 138,138 | 202,205 | 25,026 | 18% | (39,041) | (19%) |
| December | 176,353 | 131,544 | 179,303 | 44,809 | 34% | (2,950) | (2%) |
| **Total** | **2,167,637** | **1,855,022** | **2,392,689** | **312,615** | **17%** | **(225,052)** | **(9%)** |

*Redding has a slight summer peak, with June through August accounting for 34 percent of all visitation in 2021. July was the peak month while February was the lowest month for visitation.*

## SEASONALITY

**Exhibit 3.1** shows the seasonality for the Redding area for visitors whose homes are more than 100 miles away. Redding has a slight summer peak, with June through August accounting for 34 percent of all visitation in 2021, up from 31 percent in 2019. July was the peak month while February was the lowest month for visitation. In 2019, July was also the peak month while January was the lowest month. Even with the impact of the pandemic, calendar year 2020 still peaked in July, but the lowest month for visitation was April.

**EXHIBIT 3.1 VISITS BY MONTH – BEYOND 100 MILES**



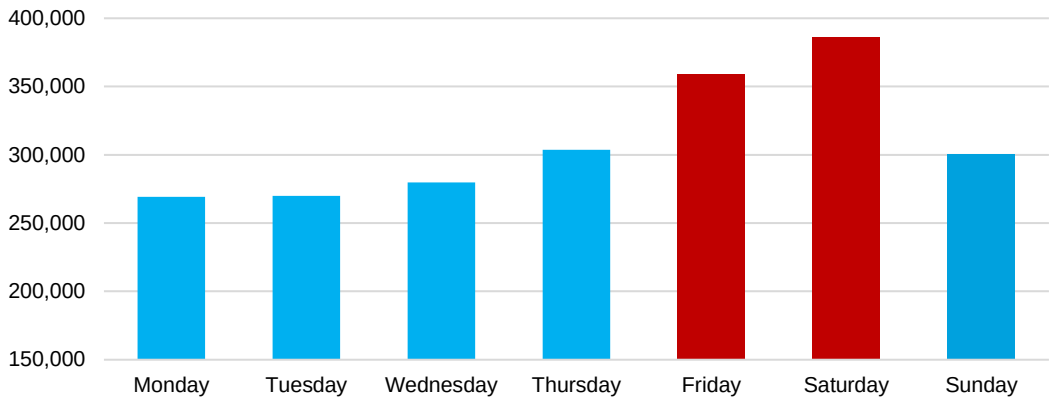

## DAY-OF-WEEK VISITATION

It is helpful to understand when visits occur by day-of-week. **Table 3.2** shows the percentage of visitors in 2021 by the day-of-week. Visitation was the highest, 17 to 18 percent of the total, on Friday and Saturday. The lowest visitation occurred Monday and Tuesday at 12 percent of the total. To further demonstrate the differences by day-of-week, **Exhibit 3.2** shows the estimated total by day for calendar year 2021. Overall, visitors from beyond 100 miles to the Redding area favor the weekends, with Friday and Saturday above the average for visitation, while Monday and Tuesday were the lowest days for visitation. The Friday and Saturday visitation peaks are likely due to the inbound tourist market.

**TABLE 3.2 DAY-OF-WEEK VISITATION – BEYOND 100 MILES (CY 2021)**

| DAY OF WEEK | VISITATION AS A % OF TOTAL |
|---|---|
| Monday | 12% |
| Tuesday | 12% |
| Wednesday | 13% |
| Thursday | 14% |
| Friday | 17% |
| Saturday | 18% |
| Sunday | 14% |

**EXHIBIT 3.2 DAY-OF-WEEK VISITS – BEYOND 100 MILES (CY 2021)**



# TRUE VISITATION BY REGION AND STATE

Visitation to the Redding area varies greatly by region, with demand typically strongest from regions closer to the Redding area since much of the visitation occurs via the automobile. **Table 4.1** shows the number of visits for calendar year 2021 compared to calendar years 2019 and 2020 by region for visits beyond 100 miles. **Exhibit 4.1** provides a depiction of the states that make up each region.

**EXHIBIT 4.1 GEOGRAPHIC REGIONS**


The West region was the largest region, with more than 1.4 million visits in 2021, representing 65 percent of the overall visitation to the Redding area from beyond 100 miles, up from 59 percent in 2019. The West region visitation was up slightly in 2021 over 2019, the only region to have increased visitation since 2019. The Northwest region was the second largest in 2021, with nearly 555,000 visits from beyond 100 miles. The Northwest region visitation declined 18 percent since 2019. The Great Lakes region was the third largest region at more than 53,000 visits in 2021 followed by the Southwest region, with more than 47,000 visits. The region with the most significant reduction on a percentage basis since 2019 was the East region, declining 45 percent. Visitation was up in 2021 compared to 2020 in all regions except the Southeast region and Alaska.

**TABLE 4.1 VISITATION BY REGION - BEYOND 100 MILES**

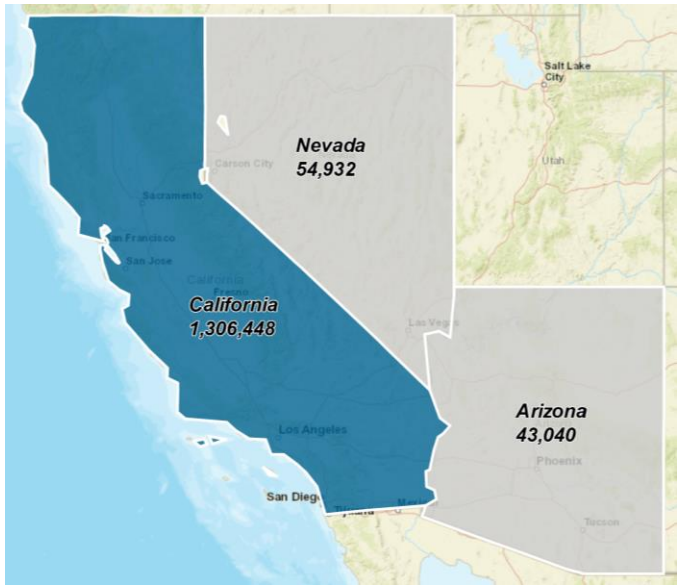
| REGION | VISITATION | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| West | 1,411,441 | 1,216,243 | 1,405,348 | 195,198 | 16% | 6,093 | 0% |
| Northwest | 554,965 | 455,749 | 675,124 | 99,216 | 22% | (120,159) | (18%) |
| Great Lakes | 53,356 | 45,091 | 67,109 | 8,265 | 18% | (13,753) | (20%) |
| Southwest | 47,152 | 44,379 | 79,144 | 2,773 | 6% | (31,992) | (40%) |
| Southeast | 45,646 | 47,326 | 79,791 | (1,680) | (4%) | (34,145) | (43%) |
| East | 25,389 | 22,028 | 45,894 | 3,361 | 15% | (20,505) | (45%) |
| Central | 16,291 | 14,257 | 21,508 | 2,034 | 14% | (5,217) | (24%) |
| Northeast | 7,246 | 3,562 | 9,676 | 3,684 | 103% | (2,430) | (25%) |
| Alaska | 6,151 | 6,387 | 9,095 | (236) | (4%) | (2,944) | (32%) |
| **Total** | **2,167,637** | **1,855,022** | **2,392,689** | **312,615** | **17%** | **(225,052)** | **(9%)** |

*Ninety-three percent of the visitation from the West region was from California, with more than 1.3 million visits in 2021 from California and increased 4 percent since 2019.*

## WEST REGION

The Redding area had more than 1.4 million visits in 2021 from the West region. **Exhibit 4.2** provides a heat map and visitation by state. **Table 4.2** provides visitation by state and the top MSAs for the West region. West region visitation increased slightly, less than 1 percent, since 2019, the only region with increased visitation.

**EXHIBIT 4.2 WEST REGION HEAT MAP BY STATE**

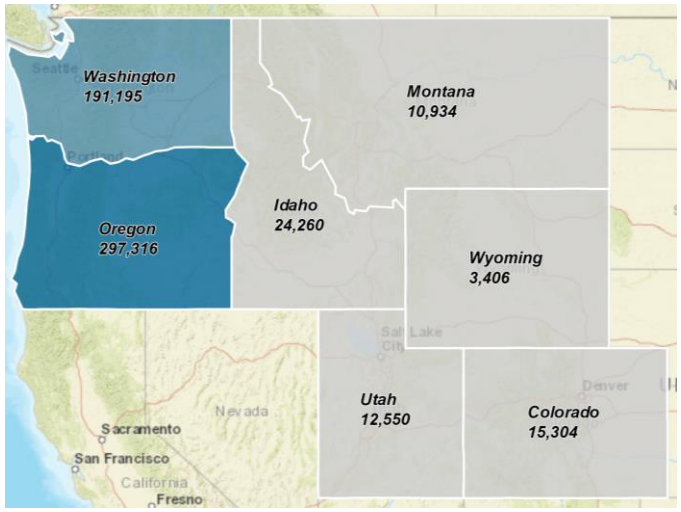



Ninety-three percent of the visitation from the West region was from California, with more than 1.3 million visits in 2021 and increased 4 percent since 2019. The Sacramento MSA had the highest visitation from California with nearly 263,000 visits. The San Francisco MSA was the second largest in California followed by the Los Angeles MSA that had an increase in visitation from 2019 to 2021 of 18 percent. Nevada had the second highest visitation from the West region, with nearly 55,000 visits in 2021 but decreased 24 percent since 2019. Arizona was the third largest state for visitation in 2021, declining 35 percent since 2019, followed by Hawaii that decreased by 18 percent since 2019.

**TABLE 4.2 WEST REGION VISITATION - BEYOND 100 MILES**

| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **California** | **1,306,448** | **1,125,466** | **1,258,395** | **180,982** | **16%** | **48,053** | **4%** |
| Sacramento-Roseville-Arden-Arcade, CA | 262,536 | 220,997 | 278,565 | 41,539 | 19% | (16,029) | (6%) |
| San Francisco-Oakland-Hayward, CA | 208,319 | 174,650 | 176,785 | 33,669 | 19% | 31,534 | 18% |
| Los Angeles-Long Beach-Anaheim, CA | 167,731 | 143,937 | 142,664 | 23,794 | 17% | 25,067 | 18% |
| San Jose-Sunnyvale-Santa Clara, CA | 81,533 | 65,587 | 65,153 | 15,946 | 24% | 16,380 | 25% |
| Riverside-San Bernardino-Ontario, CA | 77,649 | 66,142 | 73,025 | 11,507 | 17% | 4,624 | 6% |
| **Nevada** | **54,932** | **48,272** | **72,209** | **6,660** | **14%** | **(17,277)** | **(24%)** |
| Reno, NV | 23,859 | 19,479 | 30,941 | 4,380 | 22% | (7,082) | (23%) |
| Las Vegas-Henderson-Paradise, NV | 15,823 | 15,421 | 19,972 | 402 | 3% | (4,149) | (21%) |
| **Arizona** | **43,040** | **39,598** | **66,131** | **3,442** | **9%** | **(23,091)** | **(35%)** |
| Phoenix-Mesa-Scottsdale, AZ | 24,416 | 23,154 | 39,204 | 1,262 | 5% | (14,788) | (38%) |
| **Hawaii** | **7,021** | **2,907** | **8,613** | **4,114** | **142%** | **(1,592)** | **(18%)** |
| Kahului-Wailuku-Lahaina, HI | 3,025 | 440 | 2,134 | 2,585 | 588% | 891 | 42% |
| **West Region** | **1,411,441** | **1,216,243** | **1,405,348** | **195,198** | **16%** | **6,093** | **0%** |

**EXHIBIT 4.3 NORTHWEST REGION HEAT MAP BY STATE**




## NORTHWEST REGION

The Redding area had nearly 555,000 visits in 2021 from the Northwest region. **Exhibit 4.3** provides a heat map and visitation by state for the Northwest region. **Table 4.3** provides visitation by state and top MSAs for the Northwest region. Visitation from the Northwest region declined by 18 percent since 2019.

Oregon was the largest state in the region, with more than 297,000 visits in 2021 from beyond 100 miles. Visitation from Oregon declined 20 percent since 2019. The Portland metro area made up 24 percent of visitation from Oregon, up from 21 percent in 2019. Washington had the second most visits from the Northwest region, with more than 191,000 visits in 2021. The Seattle MSA made up 52 percent of visitation from Washington, up from 44 percent in 2019. Idaho had the third highest visitation. Colorado, Utah, Montana and Wyoming followed in order of visitation from the Northwest region. On a percentage basis, visitation from Montana decreased at the highest percentage while Wyoming was the only state in the Northwest region with increased visitation since 2019, increasing 4 percent.

**TABLE 4.3 NORTHWEST REGION VISITATION - BEYOND 100 MILES**

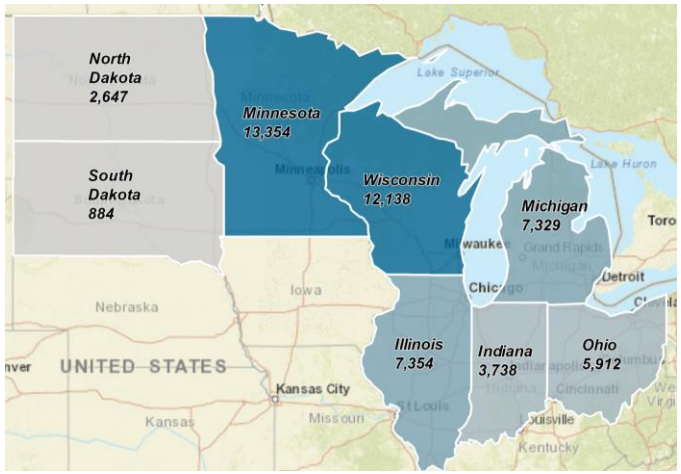
| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **Oregon** | **297,316** | **234,298** | **372,226** | **63,018** | **27%** | **(74,910)** | **(20%)** |
| Portland-Vancouver-Hillsboro, OR-WA | 72,497 | 55,240 | 79,810 | 17,257 | 31% | (7,313) | (9%) |
| Medford, OR | 51,548 | 44,718 | 82,407 | 6,830 | 15% | (30,859) | (37%) |
| Klamath Falls, OR | 31,461 | 23,197 | 32,376 | 8,264 | 36% | (915) | (3%) |
| Eugene, OR | 29,991 | 24,038 | 41,089 | 5,953 | 25% | (11,098) | (27%) |
| **Washington** | **191,195** | **159,797** | **205,984** | **31,398** | **20%** | **(14,789)** | **(7%)** |
| Seattle-Tacoma-Bellevue, WA | 99,000 | 78,207 | 90,963 | 20,793 | 27% | 8,037 | 9% |
| **Idaho** | **24,260** | **26,981** | **38,329** | **(2,721)** | **(10%)** | **(14,069)** | **(37%)** |
| Boise City, ID | 10,040 | 10,758 | 15,134 | (718) | (7%) | (5,094) | (34%) |
| **Colorado** | **15,304** | **9,582** | **15,996** | **5,722** | **60%** | **(692)** | **(4%)** |
| Denver-Aurora-Lakewood, CO | 6,061 | 4,228 | 7,687 | 1,833 | 43% | (1,626) | (21%) |
| Colorado Springs, CO | 2,825 | 1,549 | 2,106 | 1,276 | 82% | 719 | 34% |
| **Utah** | **12,550** | **12,762** | **19,012** | **(212)** | **(2%)** | **(6,462)** | **(34%)** |
| Salt Lake City, UT | 4,012 | 3,775 | 5,695 | 237 | 6% | (1,683) | (30%) |
| Provo-Orem, UT | 3,165 | 2,961 | 2,986 | 204 | 7% | 179 | 6% |
| **Montana** | **10,934** | **9,119** | **20,296** | **1,815** | **20%** | **(9,362)** | **(46%)** |
| Bozeman, MT | 3,268 | 2,517 | 1,623 | 751 | 30% | 1,645 | 101% |
| **Wyoming** | **3,406** | **3,210** | **3,281** | **196** | **6%** | **125** | **4%** |
| **Northwest Region** | **554,965** | **455,749** | **675,124** | **99,216** | **22%** | **(120,159)** | **(18%)** |

*Visitation in 2021 declined 20 percent from the Great Lakes region since 2019, with three states in the Great Lakes region increasing in visitation, including Minnesota, Wisconsin and North Dakota.*

## GREAT LAKES REGION

The Redding area had more than 53,000 visits in 2021 from the Great Lakes region. **Exhibit 4.4** provides a heat map and visitation by state. **Table 4.4** provides visitation by state and the top MSAs for the Great Lakes region. The Great Lakes region had a 20 percent reduction in visits in 2021 since 2019; however, visitation increased 18 percent since 2020.

**EXHIBIT 4.4 GREAT LAKES REGION HEAT MAP BY STATE**




By state, Minnesota had the highest visitation in the region, with more than 13,000 visits in 2021. Visitation from Minnesota increased 11 percent from 2019, overtaking Michigan as the largest state for visitation. Wisconsin was the second largest state, with more than 12,000 visits in 2021 and had a significant 50 percent increase in visitation since 2019. Illinois had nearly 7,400 visits in 2021, while Michigan was the fourth largest state in 2021 with more than 7,300 visits. Ohio, Indiana, North Dakota and South Dakota rounded out the top visitation by state in the Great Lakes region. Three states had increased visitation since 2019, including Minnesota, Wisconsin and North Dakota, with North Dakota increasing by the highest percentage at 72 percent. South Dakota had the largest decrease at 78 percent.

**TABLE 4.4 GREAT LAKES REGION VISITATION - BEYOND 100 MILES**

| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **Minnesota** | **13,354** | **9,281** | **12,082** | **4,073** | **44%** | **1,272** | **11%** |
| Minneapolis-St. Paul-Bloomington, MN-WI | 12,021 | 7,661 | 8,633 | 4,360 | 57% | 3,388 | 39% |
| **Wisconsin** | **12,138** | **5,855** | **8,086** | **6,283** | **107%** | **4,052** | **50%** |
| Milwaukee-Waukesha-West Allis, WI | 3,766 | 2,050 | 1,428 | 1,716 | 84% | 2,338 | 164% |
| **Illinois** | **7,354** | **7,201** | **12,898** | **153** | **2%** | **(5,544)** | **(43%)** |
| Chicago-Naperville-Elgin, IL-IN-WI | 4,669 | 5,671 | 8,936 | (1,002) | (18%) | (4,267) | (48%) |
| **Michigan** | **7,329** | **7,224** | **12,911** | **105** | **1%** | **(5,582)** | **(43%)** |
| Detroit-Warren-Dearborn, MI | 2,559 | 2,146 | 3,122 | 413 | 19% | (563) | (18%) |
| **Ohio** | **5,912** | **7,163** | **10,068** | **(1,251)** | **(17%)** | **(4,156)** | **(41%)** |
| Cleveland-Elyria, OH | 1,819 | 1,948 | 2,167 | (129) | (7%) | (348) | (16%) |
| Columbus, OH | 1,742 | 897 | 1,735 | 845 | 94% | 7 | 0% |
| **Indiana** | **3,738** | **4,516** | **5,457** | **(778)** | **(17%)** | **(1,719)** | **(32%)** |
| Indianapolis-Carmel-Anderson, IN | 975 | 2,259 | 2,096 | (1,284) | (57%) | (1,121) | (53%) |
| **North Dakota** | **2,647** | **1,171** | **1,539** | **1,476** | **126%** | **1,108** | **72%** |
| **South Dakota** | **884** | **2,680** | **4,068** | **(1,796)** | **(67%)** | **(3,184)** | **(78%)** |
| **Great Lakes Region** | **53,356** | **45,091** | **67,109** | **8,265** | **18%** | **(13,753)** | **(20%)** |

**EXHIBIT 4.5 SOUTHWEST REGION HEAT MAP BY STATE**


## SOUTHWEST REGION

The Redding area had more than 47,000 visits in 2021 from the Southwest region. **Exhibit 4.5** provides a heat map and visitation by state. **Table 4.5** provides visitation by state and the top MSAs for the Southwest region. Visitation from the Southwest region decreased 40 percent since 2019 while visitation improved only 6 percent since 2020.

Texas had the most visits from the Southwest region, with nearly 31,000 visits in 2021. The Dallas-Fort Worth MSA accounted for 24 percent of the Texas visitation, down slightly from 25 percent in 2019, and decreased 39 percent since 2019. The Houston MSA was the second largest in 2021 and Austin was third, with both MSAs increasing in visitation since 2019. Oklahoma had the second highest visitation by state from the region, followed by New Mexico, Louisiana and Arkansas. All states in the region had decreasing visitation to the Redding area since 2019, with Arkansas decreasing by the highest percentage at 60 percent and Louisiana decreasing by the lowest percentage at 35 percent.

**TABLE 4.5 SOUTHWEST REGION VISITATION - BEYOND 100 MILES**

| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **Texas** | **30,610** | **24,593** | **48,030** | **6,017** | **24%** | **(17,420)** | **(36%)** |
| Dallas-Fort Worth-Arlington, TX | 7,200 | 4,809 | 11,819 | 2,391 | 50% | (4,619) | (39%) |
| Houston-The Woodlands-Sugar Land, TX | 6,075 | 4,835 | 5,801 | 1,240 | 26% | 274 | 5% |
| Austin-Round Rock, TX | 4,668 | 3,390 | 4,607 | 1,278 | 38% | 61 | 1% |
| **Oklahoma** | **6,726** | **7,829** | **11,929** | **(1,103)** | **(14%)** | **(5,203)** | **(44%)** |
| Tulsa, OK | 1,788 | 3,730 | 2,880 | (1,942) | (52%) | (1,092) | (38%) |
| Oklahoma City, OK | 1,484 | 1,174 | 1,618 | 310 | 26% | (134) | (8%) |
| **New Mexico** | **4,536** | **5,581** | **8,804** | **(1,045)** | **(19%)** | **(4,268)** | **(48%)** |
| Albuquerque, NM | 1,363 | 1,497 | 2,913 | (134) | (9%) | (1,550) | (53%) |
| **Louisiana** | **2,946** | **2,852** | **4,542** | **94** | **3%** | **(1,596)** | **(35%)** |
| **Arkansas** | **2,334** | **3,524** | **5,839** | **(1,190)** | **(34%)** | **(3,505)** | **(60%)** |
| **Southwest Region** | **47,152** | **44,379** | **79,144** | **2,773** | **6%** | **(31,992)** | **(40%)** |

*The Southeast region had nearly 46,000 visits in 2021 to the Redding area, with Florida being the largest state at more than 18,000 visits. Florida had a 36 percent reduction in visits since 2019.*

## SOUTHEAST REGION

The Redding area had nearly 46,000 visits in 2021 from the Southeast region. **Exhibit 4.6** provides a heat map and visitation by state. **Table 4.6** provides visitation by state and the top MSAs for the Southeast region. Visitation in 2021 declined 43 percent since 2019 and remained down from 2020, decreasing 4 percent.

Florida had the highest visitation from the Southeast region, with more than 18,000 visits in 2021. The Miami MSA was the largest MSA for visitation to the area from Florida followed by the Tampa MSA. Georgia had the second highest visitation with more than 7,000 visits in 2021. Tennessee had nearly 5,500 visits in 2021, while North Carolina had more than 4,200 visits. Kentucky, South Carolina, Alabama and Mississippi rounded out the Southeast region by state, with all states decreasing since 2019.

**EXHIBIT 4.6 SOUTHEAST REGION HEAT MAP BY STATE**

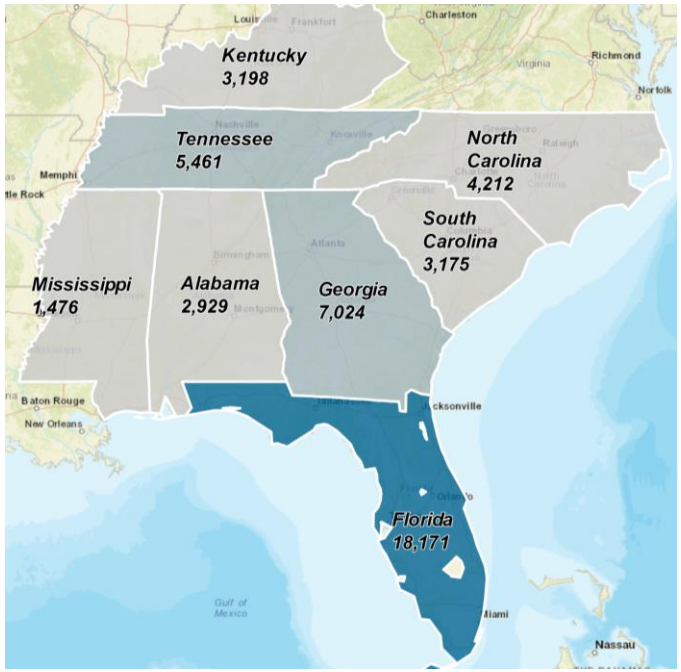



**TABLE 4.6 SOUTHEAST REGION VISITATION - BEYOND 100 MILES**

| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **Florida** | **18,171** | **17,907** | **28,235** | **264** | **1%** | **(10,064)** | **(36%)** |
| Miami-Fort Lauderdale-West Palm Beach, FL | 4,025 | 5,318 | 6,737 | (1,293) | (24%) | (2,712) | (40%) |
| Tampa-St. Petersburg-Clearwater, FL | 3,365 | 2,578 | 5,413 | 787 | 31% | (2,048) | (38%) |
| **Georgia** | **7,024** | **6,098** | **7,962** | **926** | **15%** | **(938)** | **(12%)** |
| Atlanta-Sandy Springs-Roswell, GA | 4,304 | 2,434 | 3,587 | 1,870 | 77% | 717 | 20% |
| **Tennessee** | **5,461** | **6,822** | **12,130** | **(1,361)** | **(20%)** | **(6,669)** | **(55%)** |
| Nashville-Davidson-Murfreesboro-Franklin, TN | 2,048 | 2,072 | 3,667 | (24) | (1%) | (1,619) | (44%) |
| **North Carolina** | **4,212** | **4,765** | **10,772** | **(553)** | **(12%)** | **(6,560)** | **(61%)** |
| Charlotte-Concord-Gastonia, NC-SC | 1,233 | 898 | 2,069 | 335 | 37% | (836) | (40%) |
| **Kentucky** | **3,198** | **3,797** | **6,028** | **(599)** | **(16%)** | **(2,830)** | **(47%)** |
| Lexington-Fayette, KY | 1,294 | 1,994 | 1,201 | (700) | (35%) | 93 | 8% |
| **South Carolina** | **3,175** | **3,664** | **6,434** | **(489)** | **(13%)** | **(3,259)** | **(51%)** |
| Charleston-North Charleston, SC | 914 | 388 | 869 | 526 | 136% | 45 | 5% |
| **Alabama** | **2,929** | **3,086** | **4,354** | **(157)** | **(5%)** | **(1,425)** | **(33%)** |
| Birmingham-Hoover, AL | 1,203 | 1,428 | 878 | (225) | (16%) | 325 | 37% |
| **Mississippi** | **1,476** | **1,187** | **3,876** | **289** | **24%** | **(2,400)** | **(62%)** |
| **Southeast Region** | **45,646** | **47,326** | **79,791** | **(1,680)** | **(4%)** | **(34,145)** | **(43%)** |

**EXHIBIT 4.7 EAST REGION HEAT MAP BY STATE**


## EAST REGION

The Redding area had more than 25,000 visits in 2021 from the East region. **Exhibit 4.7** provides a heat map and visitation by state. **Table 4.7** provides visitation by state and the top MSAs for the East region. Visitation from the East region declined 45 percent since 2019 but increased 15 percent since 2020.

On a state basis, New York had the most visits from the East region, with nearly 9,000 visits in 2021. The New York-Newark-Jersey City MSA was the largest MSA for visitation but decreased significantly since 2019 at 49 percent. Pennsylvania generated nearly 6,000 visits in 2021, with 47 percent of visits from the Philadelphia MSA. Virginia, Maryland, New Jersey, West Virginia, the District of Columbia and Delaware made up the remaining visitation by state. Only West Virginia and the District of Columbia had increased visitation since 2019, while the remaining states had decreased visitation. Maryland had the highest percentage decrease in visitation since 2019 at 68 percent.

**TABLE 4.7 EAST REGION VISITATION - BEYOND 100 MILES**

| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **New York** | **8,562** | **7,992** | **18,193** | **570** | **7%** | **(9,631)** | **(53%)** |
| New York-Newark-Jersey City, NY-NJ-PA | 6,110 | 5,837 | 12,018 | 273 | 5% | (5,908) | (49%) |
| **Pennsylvania** | **5,752** | **4,731** | **6,554** | **1,021** | **22%** | **(802)** | **(12%)** |
| Philadelphia-Camden-Wilmington, PA-NJ-DE-MD | 2,705 | 1,815 | 1,918 | 890 | 49% | 787 | 41% |
| **Virginia** | **5,445** | **3,570** | **9,359** | **1,875** | **53%** | **(3,914)** | **(42%)** |
| Washington-Arlington-Alexandria, DC-VA-MD-WV | 1,663 | 1,512 | 4,193 | 151 | 10% | (2,530) | (60%) |
| Virginia Beach-Norfolk-Newport News, VA-NC | 1,262 | 882 | 2,775 | 380 | 43% | (1,513) | (55%) |
| **Maryland** | **2,240** | **3,136** | **7,086** | **(896)** | **(29%)** | **(4,846)** | **(68%)** |
| Baltimore-Columbia-Towson, MD | 1,294 | 2,103 | 4,315 | (809) | (38%) | (3,021) | (70%) |
| **New Jersey** | **1,603** | **1,439** | **3,391** | **164** | **11%** | **(1,788)** | **(53%)** |
| **West Virginia** | **1,264** | **904** | **862** | **360** | **40%** | **402** | **47%** |
| **District of Columbia** | **356** | **0** | **74** | **356** | **100%** | **282** | **381%** |
| **Delaware** | **167** | **256** | **375** | **(89)** | **(35%)** | **(208)** | **(55%)** |
| **East Region** | **25,389** | **22,028** | **45,894** | **3,361** | **15%** | **(20,505)** | **(45%)** |

*The Central region had more than 16,000 visits to the Redding area in 2021 and had a decrease of 24 percent in visitation since 2019, with all states in the region having decreased visitation year-over-year, except Kansas that increased 47 percent.*

## CENTRAL REGION

The Redding area had more than 16,000 visits in 2021 from the Central region. **Exhibit 4.8** provides a heat map and visitation by state. **Table 4.8** provides visitation by state and the top MSAs for the Central region. Visits from the Central region declined 24 percent in 2019 but was up 14 percent since 2020.

Missouri had the highest visits from the Central region, with nearly 6,000 visits in 2021 and a decline of 52 percent. Kansas was the second highest visitation state from the Central region, with nearly 5,500 visits and had a 47 percent increase in visits since 2019. Iowa and Nebraska rounded out the Central Region with every state decreasing except Kansas since 2019.

**EXHIBIT 4.8 CENTRAL REGION HEAT MAP BY STATE**

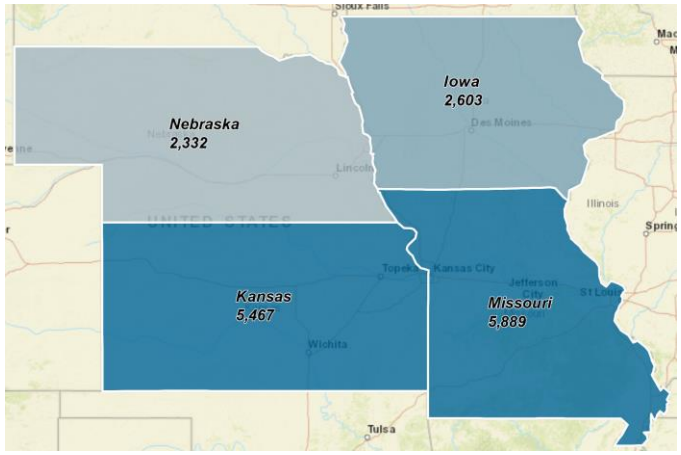
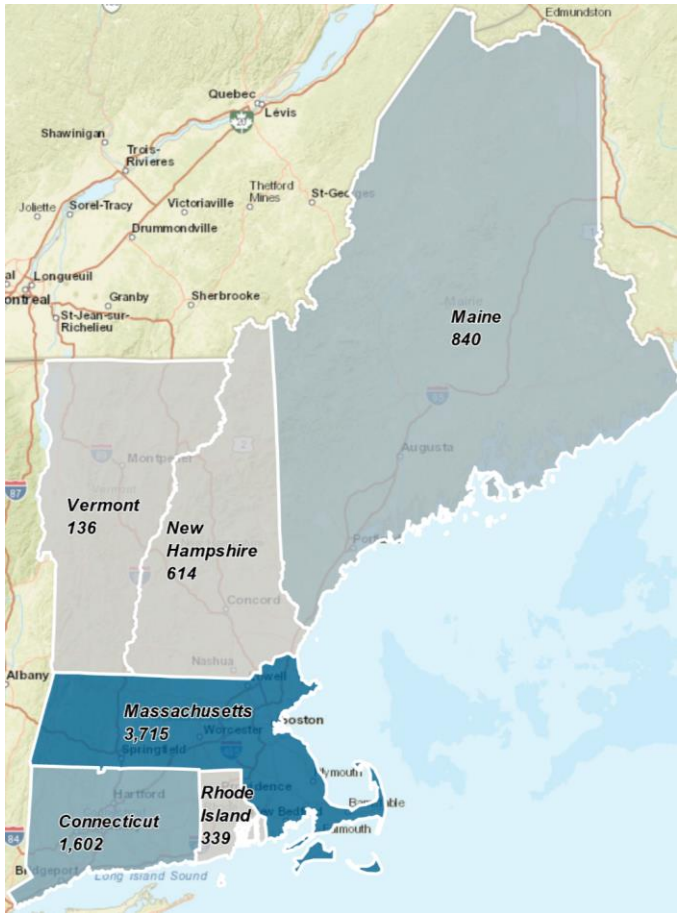



**TABLE 4.8 CENTRAL REGION VISITATION - BEYOND 100 MILES**

| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **Missouri** | **5,889** | **7,136** | **12,296** | **(1,247)** | **(17%)** | **(6,407)** | **(52%)** |
| Kansas City, MO-KS | 1,421 | 895 | 2,006 | 526 | 59% | (585) | (29%) |
| **Kansas** | **5,467** | **3,174** | **3,716** | **2,293** | **72%** | **1,751** | **47%** |
| Wichita, KS | 1,240 | 726 | 657 | 514 | 71% | 583 | 89% |
| Kansas City, MO-KS | 1,076 | 338 | 823 | 738 | 218% | 253 | 31% |
| **Iowa** | **2,603** | **1,753** | **2,849** | **850** | **48%** | **(246)** | **(9%)** |
| **Nebraska** | **2,332** | **2,194** | **2,647** | **138** | **6%** | **(315)** | **(12%)** |
| Omaha-Council Bluffs, NE-IA | 1,233 | 1,153 | 773 | 80 | 7% | 460 | 60% |
| **Central Region** | **16,291** | **14,257** | **21,508** | **2,034** | **14%** | **(5,217)** | **(24%)** |

**EXHIBIT 4.9 NORTHEAST REGION HEAT MAP BY STATE**




## NORTHEAST REGION

The Redding area had more than 7,200 visits in 2021 from the Northeast region. **Exhibit 4.9** provides a heat map and visitation by state. **Table 4.9** provides visitation by state and the top MSAs for the Northeast region. Visitation from the Northeast region decreased 25 percent since 2019 but more than doubled since 2020.

By state, Massachusetts had the highest number of visits in 2021, surpassing Maine as the highest visitation state in 2019. Visitation from Massachusetts increased by 31 percent while visitation from Maine decreased 71 percent. Boston generated 61 percent of visits from Massachusetts, up from 52 percent in 2019. Connecticut had the second highest level of visitation followed by Maine, New Hampshire, Rhode Island and Vermont. Massachusetts was the only state with increased visitation since 2019, while both Maine and Vermont decreased by greater than 70 percent since 2019.

**TABLE 4.9 NORTHEAST REGION VISITATION - BEYOND 100 MILES**

| STATE/MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| **Massachusetts** | **3,715** | **1,530** | **2,834** | **2,185** | **143%** | **881** | **31%** |
| Boston-Cambridge-Newton, MA-NH | 2,280 | 961 | 1,478 | 1,319 | 137% | 802 | 54% |
| **Connecticut** | **1,602** | **448** | **1,891** | **1,154** | **258%** | **(289)** | **(15%)** |
| Hartford-West Hartford-East Hartford, CT | 732 | 183 | 532 | 549 | 300% | 200 | 38% |
| **Maine** | **840** | **654** | **2,854** | **186** | **28%** | **(2,014)** | **(71%)** |
| Portland-South Portland, ME | 543 | 505 | 772 | 38 | 8% | (229) | (30%) |
| **New Hampshire** | **614** | **289** | **1,081** | **325** | **112%** | **(467)** | **(43%)** |
| Manchester-Nashua, NH | 307 | 149 | 408 | 158 | 106% | (101) | (25%) |
| **Rhode Island** | **339** | **312** | **403** | **27** | **9%** | **(64)** | **(16%)** |
| Providence-Warwick, RI-MA | 339 | 312 | 403 | 27 | 9% | (64) | (16%) |
| **Vermont** | **136** | **329** | **613** | **(193)** | **(59%)** | **(477)** | **(78%)** |
| **Northeast Region** | **7,246** | **3,562** | **9,676** | **3,684** | **103%** | **(2,430)** | **(25%)** |

*Nine states had increased visitation in 2021 compared to 2019, while three states had decreases of more than 70 percent, including South Dakota, Maine and Vermont.*

## TRUE VISITATION BY STATE

**Table 4.10** provides visitation ranked by state. California (including only communities greater than 100 miles from the Redding area) had the highest visitation in all three years. California had more than 1.3 million visits in 2021 and had a 4 percent increase in visits since 2019. California represented 60 percent of total visitation in 2021 up from 53 percent of visitation in 2019. Oregon was the second largest state with visitation to the Redding area in 2021 followed by Washington, Nevada and Arizona. Nine states had increased visitation in 2021 compared to 2019, including California, Minnesota, Wisconsin, Kansas, Massachusetts, Wyoming, North Dakota, West Virginia and the District of Columbia. While the majority of states had decreased visitation from 2019 to 2021, 13 states had decreases of 50 percent or greater. Only three states had decreases of more than 70 percent, including South Dakota, Maine and Vermont.

**TABLE 4.10 VISITATION BY STATE - BEYOND 100 MILES**

| RANK | STATE | CALENDAR YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|---|
| | | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| 1 | California | 1,306,448 | 1,125,466 | 1,258,395 | 16% | 4% |
| 2 | Oregon | 297,316 | 234,298 | 372,226 | 27% | (20%) |
| 3 | Washington | 191,195 | 159,797 | 205,984 | 20% | (7%) |
| 4 | Nevada | 54,932 | 48,272 | 72,209 | 14% | (24%) |
| 5 | Arizona | 43,040 | 39,598 | 66,131 | 9% | (35%) |
| 6 | Texas | 30,610 | 24,593 | 48,030 | 24% | (36%) |
| 7 | Idaho | 24,260 | 26,981 | 38,329 | (10%) | (37%) |
| 8 | Florida | 18,171 | 17,907 | 28,235 | 1% | (36%) |
| 9 | Colorado | 15,304 | 9,582 | 15,996 | 60% | (4%) |
| 10 | Minnesota | 13,354 | 9,281 | 12,082 | 44% | 11% |
| 11 | Utah | 12,550 | 12,762 | 19,012 | (2%) | (34%) |
| 12 | Wisconsin | 12,138 | 5,855 | 8,086 | 107% | 50% |
| 13 | Montana | 10,934 | 9,119 | 20,296 | 20% | (46%) |
| 14 | New York | 8,562 | 7,992 | 18,193 | 7% | (53%) |
| 15 | Illinois | 7,354 | 7,201 | 12,898 | 2% | (43%) |
| 16 | Michigan | 7,329 | 7,224 | 12,911 | 1% | (43%) |
| 17 | Georgia | 7,024 | 6,098 | 7,962 | 15% | (12%) |
| 18 | Hawaii | 7,021 | 2,907 | 8,613 | 142% | (18%) |
| 19 | Oklahoma | 6,726 | 7,829 | 11,929 | (14%) | (44%) |
| 20 | Alaska | 6,151 | 6,387 | 9,095 | (4%) | (32%) |
| 21 | Ohio | 5,912 | 7,163 | 10,068 | (17%) | (41%) |
| 22 | Missouri | 5,889 | 7,136 | 12,296 | (17%) | (52%) |
| 23 | Pennsylvania | 5,752 | 4,731 | 6,554 | 22% | (12%) |
| 24 | Kansas | 5,467 | 3,174 | 3,716 | 72% | 47% |
| 25 | Tennessee | 5,461 | 6,822 | 12,130 | (20%) | (55%) |
| 26 | Virginia | 5,445 | 3,570 | 9,359 | 53% | (42%) |

**TABLE 4.10 VISITATION BY STATE - BEYOND 100 MILES (CONTINUED)**

| RANK | STATE | CALENDAR YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|---|
| | | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| 27 | New Mexico | 4,536 | 5,581 | 8,804 | (19%) | (48%) |
| 28 | North Carolina | 4,212 | 4,765 | 10,772 | (12%) | (61%) |
| 29 | Indiana | 3,738 | 4,516 | 5,457 | (17%) | (32%) |
| 30 | Massachusetts | 3,715 | 1,530 | 2,834 | 143% | 31% |
| 31 | Wyoming | 3,406 | 3,210 | 3,281 | 6% | 4% |
| 32 | Kentucky | 3,198 | 3,797 | 6,028 | (16%) | (47%) |
| 33 | South Carolina | 3,175 | 3,664 | 6,434 | (13%) | (51%) |
| 34 | Louisiana | 2,946 | 2,852 | 4,542 | 3% | (35%) |
| 35 | Alabama | 2,929 | 3,086 | 4,354 | (5%) | (33%) |
| 36 | North Dakota | 2,647 | 1,171 | 1,539 | 126% | 72% |
| 37 | Iowa | 2,603 | 1,753 | 2,849 | 48% | (9%) |
| 38 | Arkansas | 2,334 | 3,524 | 5,839 | (34%) | (60%) |
| 39 | Nebraska | 2,332 | 2,194 | 2,647 | 6% | (12%) |
| 40 | Maryland | 2,240 | 3,136 | 7,086 | (29%) | (68%) |
| 41 | New Jersey | 1,603 | 1,439 | 3,391 | 11% | (53%) |
| 42 | Connecticut | 1,602 | 448 | 1,891 | 258% | (15%) |
| 43 | Mississippi | 1,476 | 1,187 | 3,876 | 24% | (62%) |
| 44 | West Virginia | 1,264 | 904 | 862 | 40% | 47% |
| 45 | South Dakota | 884 | 2,680 | 4,068 | (67%) | (78%) |
| 46 | Maine | 840 | 654 | 2,854 | 28% | (71%) |
| 47 | New Hampshire | 614 | 289 | 1,081 | 112% | (43%) |
| 48 | District of Columbia | 356 | 0 | 74 | 100% | 381% |
| 49 | Rhode Island | 339 | 312 | 403 | 9% | (16%) |
| 50 | Delaware | 167 | 256 | 375 | (35%) | (55%) |
| 51 | Vermont | 136 | 329 | 613 | (59%) | (78%) |
| | **Total** | **2,167,637** | **1,855,022** | **2,392,689** | **17%** | **(9%)** |

# TRUE VISITATION BY METROPOLITAN AREA

It is beneficial to review visitation by MSA in order to determine the top opportunities for new or expanded air service. Depending on the market, nonstop air service typically relies heavily on local market demand for the service to be successful, with connectivity beyond to markets that cannot support nonstop service. This section provides visitation by MSA, including a visitation by month review for several top MSAs.

## VISITATION BY MSA

**Table 5.1** identifies the top 50 MSAs for visitation to the Redding area.

**TABLE 5.1 VISITATION BY MSA - BEYOND 100 MILES**

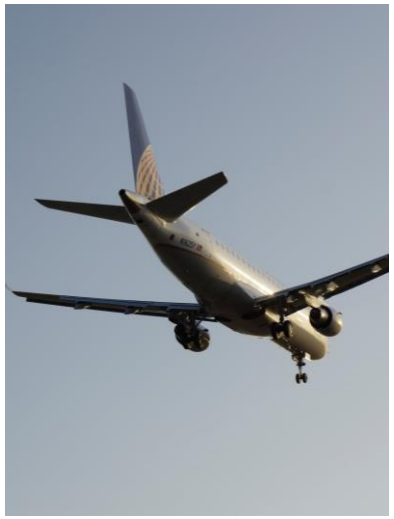
| RANK | MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|---|
| | | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| 1 | Sacramento-Roseville-Arden-Arcade, CA | 262,536 | 220,997 | 278,565 | 41,539 | 19% | (16,029) | (6%) |
| 2 | San Francisco-Oakland-Hayward, CA | 208,319 | 174,650 | 176,785 | 33,669 | 19% | 31,534 | 18% |
| 3 | Los Angeles-Long Beach-Anaheim, CA | 167,731 | 143,937 | 142,664 | 23,794 | 17% | 25,067 | 18% |
| 4 | Seattle-Tacoma-Bellevue, WA | 99,000 | 78,207 | 90,963 | 20,793 | 27% | 8,037 | 9% |
| 5 | Portland-Vancouver-Hillsboro, OR-WA | 90,874 | 71,520 | 98,948 | 19,354 | 27% | (8,074) | (8%) |
| 6 | San Jose-Sunnyvale-Santa Clara, CA | 81,533 | 65,587 | 65,153 | 15,946 | 24% | 16,380 | 25% |
| 7 | Riverside-San Bernardino-Ontario, CA | 77,649 | 66,142 | 73,025 | 11,507 | 17% | 4,624 | 6% |
| 8 | Medford, OR | 51,548 | 44,718 | 82,407 | 6,830 | 15% | (30,859) | (37%) |
| 9 | Santa Rosa, CA | 50,761 | 44,729 | 49,299 | 6,032 | 13% | 1,462 | 3% |
| 10 | Stockton-Lodi, CA | 49,000 | 44,145 | 44,402 | 4,855 | 11% | 4,598 | 10% |
| 11 | Fresno, CA | 41,267 | 32,470 | 31,621 | 8,797 | 27% | 9,646 | 31% |
| 12 | Vallejo-Fairfield, CA | 39,668 | 32,777 | 41,739 | 6,891 | 21% | (2,071) | (5%) |
| 13 | San Diego-Carlsbad, CA | 38,921 | 41,898 | 38,688 | (2,977) | (7%) | 233 | 1% |
| 14 | Klamath Falls, OR | 31,461 | 23,197 | 32,376 | 8,264 | 36% | (915) | (3%) |
| 15 | Eugene, OR | 29,991 | 24,038 | 41,089 | 5,953 | 25% | (11,098) | (27%) |
| 16 | Bakersfield, CA | 27,057 | 26,095 | 24,919 | 962 | 4% | 2,138 | 9% |
| 17 | Santa Cruz-Watsonville, CA | 25,809 | 19,117 | 20,710 | 6,692 | 35% | 5,099 | 25% |
| 18 | Modesto, CA | 25,294 | 22,143 | 24,809 | 3,151 | 14% | 485 | 2% |
| 19 | Phoenix-Mesa-Scottsdale, AZ | 24,416 | 23,154 | 39,204 | 1,262 | 5% | (14,788) | (38%) |
| 20 | Reno, NV | 23,859 | 19,479 | 30,941 | 4,380 | 22% | (7,082) | (23%) |

*The Sacramento MSA was the largest MSA for visitation in all three years from beyond 100 miles of the Redding area, generating nearly 263,000 visits in 2021.*

**TABLE 5.1 VISITATION BY MSA - BEYOND 100 MILES**

| RANK | MSA | CALENDAR YEAR | | | 2021 VS. 2020 | | 2021 VS. 2019 | |
|---|---|---|---|---|---|---|---|---|
| | | 2021 | 2020 | 2019 | DIFF. | % | DIFF. | % |
| 21 | Grants Pass, OR | 22,459 | 17,111 | 28,461 | 5,348 | 31% | (6,002) | (21%) |
| 22 | Crescent City, CA | 21,809 | 17,065 | 27,929 | 4,744 | 28% | (6,120) | (22%) |
| 23 | Oxnard-Thousand Oaks-Ventura, CA | 21,475 | 20,237 | 18,619 | 1,238 | 6% | 2,856 | 15% |
| 24 | Salem, OR | 17,733 | 12,351 | 23,428 | 5,382 | 44% | (5,695) | (24%) |
| 25 | Visalia-Porterville, CA | 16,383 | 10,716 | 13,062 | 5,667 | 53% | 3,321 | 25% |
| 26 | Salinas, CA | 16,023 | 16,906 | 21,505 | (883) | (5%) | (5,482) | (25%) |
| 27 | Bend-Redmond, OR | 15,854 | 12,634 | 21,072 | 3,220 | 25% | (5,218) | (25%) |
| 28 | Las Vegas-Henderson-Paradise, NV | 15,823 | 15,421 | 19,972 | 402 | 3% | (4,149) | (21%) |
| 29 | Roseburg, OR | 15,124 | 10,397 | 15,515 | 4,727 | 45% | (391) | (3%) |
| 30 | San Luis Obispo-Paso Robles-Arroyo Grande, CA | 13,162 | 13,585 | 18,526 | (423) | (3%) | (5,364) | (29%) |
| 31 | Napa, CA | 12,641 | 9,523 | 9,724 | 3,118 | 33% | 2,917 | 30% |
| 32 | Merced, CA | 12,527 | 12,047 | 12,695 | 480 | 4% | (168) | (1%) |
| 33 | Minneapolis-St. Paul-Bloomington, MN-WI | 12,133 | 7,769 | 8,668 | 4,364 | 56% | 3,465 | 40% |
| 34 | Clearlake, CA | 11,731 | 12,117 | 11,369 | (386) | (3%) | 362 | 3% |
| 35 | Santa Maria-Santa Barbara, CA | 11,534 | 13,403 | 14,577 | (1,869) | (14%) | (3,043) | (21%) |
| 36 | Olympia-Tumwater, WA | 10,846 | 8,441 | 10,528 | 2,405 | 28% | 318 | 3% |
| 37 | Ukiah, CA | 10,264 | 5,109 | 7,887 | 5,155 | 101% | 2,377 | 30% |
| 38 | Boise City, ID | 10,040 | 10,758 | 15,134 | (718) | (7%) | (5,094) | (34%) |
| 39 | Truckee-Grass Valley, CA | 9,282 | 9,383 | 12,519 | (101) | (1%) | (3,237) | (26%) |
| 40 | Spokane-Spokane Valley, WA | 8,349 | 7,591 | 13,005 | 758 | 10% | (4,656) | (36%) |
| 41 | Albany, OR | 7,625 | 5,958 | 8,229 | 1,667 | 28% | (604) | (7%) |
| 42 | Madera, CA | 7,589 | 6,591 | 9,670 | 998 | 15% | (2,081) | (22%) |
| 43 | Bremerton-Silverdale, WA | 7,523 | 7,959 | 8,896 | (436) | (5%) | (1,373) | (15%) |
| 44 | Dallas-Fort Worth-Arlington, TX | 7,200 | 4,809 | 11,819 | 2,391 | 50% | (4,619) | (39%) |
| 45 | New York-Newark-Jersey City, NY-NJ-PA | 6,941 | 6,419 | 13,797 | 522 | 8% | (6,856) | (50%) |
| 46 | Bellingham, WA | 6,522 | 5,060 | 5,618 | 1,462 | 29% | 904 | 16% |
| 47 | Sonora, CA | 6,161 | 5,923 | 6,129 | 238 | 4% | 32 | 1% |
| 48 | Coos Bay, OR | 6,147 | 4,996 | 6,351 | 1,151 | 23% | (204) | (3%) |
| 49 | Houston-The Woodlands-Sugar Land, TX | 6,075 | 4,835 | 5,801 | 1,240 | 26% | 274 | 5% |
| 50 | Denver-Aurora-Lakewood, CO | 6,061 | 4,228 | 7,687 | 1,833 | 43% | (1,626) | (21%) |
| **Total All Visitation - Beyond 100 Miles** | | **2,167,637** | **1,855,022** | **2,392,689** | **312,615** | **17%** | **(225,052)** | **(9%)** |

The Sacramento MSA was the largest MSA for visitation in all three years from beyond 100 miles of the Redding area, with nearly 263,000 visits in 2021. The Sacramento MSA had a 6 percent reduction in visitation since 2019. The San Francisco and Los Angeles MSAs were the second and third largest MSAs for visitation to the Redding area, with visitation from both MSAs increasing 18 percent since 2019. The Seattle and Portland MSAs rounded out the top five MSAs, being the largest MSAs from outside the state of California. RDD has nonstop service to the second, third and fourth largest MSAs as well as Las Vegas, the 28th largest MSA. Of the top 50 MSAs, 22 MSAs had increasing visitation from 2019 to 2021, while 10 MSAs had decreasing visitation of greater than 25 percent. No MSA decreased by more than 50 percent.



## VISITATION FROM TOP MSAS

It is also helpful to understand seasonality for the metropolitan areas with the highest visitation and metropolitan areas with existing RDD nonstop service.

### San Francisco-Oakland-Hayward, CA

The San Francisco MSA was the second largest MSA with more than 208,000 visits in 2021. The visitation by month is represented in **Table 5.2**. Visitation by month was up in nine months of 2021 compared to the same months in 2019, down in only February, September and November. For the calendar year, visitation averaged 18 percent higher than 2019. RDD has existing air service to San Francisco International Airport (SFO) by United Airlines. Currently, United is scheduled to provide the same number of flights and 3 percent more seats for the first six months of 2022 compared to the same months in 2019. Flights and seats are scheduled to more than double compared to 2021. United's return to pre-pandemic air service supports the increased demand.

**TABLE 5.2 VISITATION BY MONTH – SAN FRANCISCO-OAKLAND-HAYWARD, CA MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 12,457 | 8,991 | 9,681 | 39% | 29% |
| February | 8,964 | 10,698 | 12,881 | (16%) | (30%) |
| March | 12,351 | 10,438 | 11,319 | 18% | 9% |
| April | 16,829 | 5,366 | 11,364 | 214% | 48% |
| May | 20,187 | 8,926 | 15,441 | 126% | 31% |
| June | 23,404 | 18,962 | 17,332 | 23% | 35% |
| July | 31,727 | 27,498 | 23,277 | 15% | 36% |
| August | 20,649 | 25,042 | 19,653 | (18%) | 5% |
| September | 12,927 | 20,868 | 14,885 | (38%) | (13%) |
| October | 13,734 | 15,716 | 10,402 | (13%) | 32% |
| November | 16,646 | 11,471 | 17,375 | 45% | (4%) |
| December | 18,444 | 10,674 | 13,175 | 73% | 40% |
| **Total** | **208,319** | **174,650** | **176,785** | **19%** | **18%** |

### Los Angeles-Long Beach-Anaheim, CA

The Los Angeles metro area was the third largest MSA with nearly 168,000 visits. The visitation by month is represented in **Table 5.3**. Visitation increased in every month of 2021 compared to 2019, except February, November and December. The Los Angeles MSA visitation increased 18 percent in 2021 over 2019. RDD has service to Los Angeles International Airport (LAX) by United. Flights and seats are scheduled to be up 56 percent over 2019 for the first six months of 2022 and nearly double over 2021. In addition to the LAX service, Avelo Airlines operates nonstop service to Hollywood Burbank Airport (BUR), supplementing United's service to the Los Angeles Basin. This service has likely contributed to the improved visitation in 2021.

**TABLE 5.3 VISITATION BY MONTH – LOS ANGELES-LONG BEACH-ANAHEIM, CA MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 9,024 | 7,379 | 7,675 | 22% | 18% |
| February | 7,766 | 5,693 | 12,588 | 36% | (38%) |
| March | 10,840 | 5,490 | 8,021 | 97% | 35% |
| April | 13,899 | 4,670 | 8,914 | 198% | 56% |
| May | 14,792 | 10,305 | 11,174 | 44% | 32% |
| June | 19,287 | 16,400 | 15,289 | 18% | 26% |
| July | 23,381 | 24,822 | 20,490 | (6%) | 14% |
| August | 20,185 | 20,383 | 16,988 | (1%) | 19% |
| September | 15,084 | 14,288 | 9,188 | 6% | 64% |
| October | 10,634 | 12,141 | 8,074 | (12%) | 32% |
| November | 9,898 | 11,073 | 10,801 | (11%) | (8%) |
| December | 12,941 | 11,293 | 13,462 | 15% | (4%) |
| **Total** | **167,731** | **143,937** | **142,664** | **17%** | **18%** |

*As visitation from the Portland metro area returns and performance on Alaska Airlines' SEA service improves, service to PDX by Alaska is a possibility, particularly after Alaska resumes pre-pandemic service levels at PDX which remains down.*

## Seattle-Tacoma-Bellevue, WA

The Seattle metro area was the fourth largest MSA with 99,000 visits. The visitation by month is represented in **Table 5.4**. Visitation increased in eight months in 2021 over 2019, decreasing in only February, April, June and November. The Seattle MSA visitation increased 9 percent on average in 2021 over 2019. Alaska Airlines began nonstop Seattle-Tacoma International Airport (SEA) service in June 2021 on a once daily basis. This service likely impacted visitation levels positively through the remainder of 2021. The goal for the SEA service is to continue to improve performance so that Alaska can consider increasing frequency.

## Portland-Vancouver-Hillsboro, OR-WA

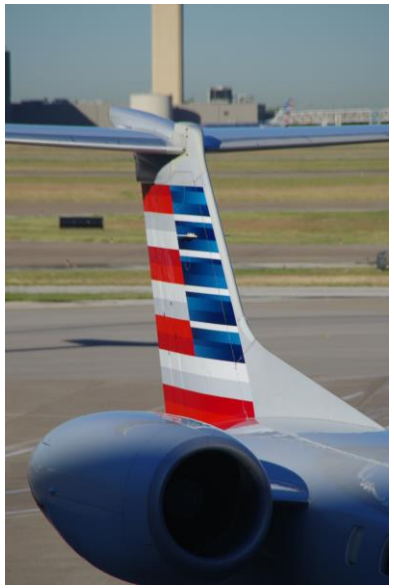
The Portland MSA was the fifth largest MSA with nearly 91,000 visits in 2021. The visitation by month is represented in **Table 5.5**. Visitation from the Portland metro area remained down in 2021 compared to 2019, decreasing in six months. On average, visitation was down 8 percent. RDD does not currently have service to the Portland metro area. As visitation from the Portland metro area returns and performance on Alaska's SEA service improves, service to Portland International Airport (PDX) by Alaska is a possibility, particularly after Alaska resumes pre-pandemic service levels at PDX which remains down. Allegiant also operates at PDX on a less-than-daily basis and could be considered for nonstop service in the future.

**TABLE 5.4 VISITATION BY MONTH – SEATTLE-TACOMA-BELLEVUE, WA MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 6,886 | 6,192 | 6,321 | 11% | 9% |
| February | 5,348 | 6,223 | 6,077 | (14%) | (12%) |
| March | 6,850 | 4,877 | 6,361 | 40% | 8% |
| April | 9,574 | 2,955 | 9,864 | 224% | (3%) |
| May | 7,582 | 5,190 | 5,468 | 46% | 39% |
| June | 8,820 | 7,998 | 9,276 | 10% | (5%) |
| July | 11,015 | 7,606 | 9,813 | 45% | 12% |
| August | 12,633 | 8,860 | 11,088 | 43% | 14% |
| September | 6,970 | 7,202 | 5,794 | (3%) | 20% |
| October | 6,995 | 6,373 | 4,777 | 10% | 46% |
| November | 6,386 | 7,663 | 6,529 | (17%) | (2%) |
| December | 9,941 | 7,068 | 9,595 | 41% | 4% |
| **Total** | **99,000** | **78,207** | **90,963** | **27%** | **9%** |

**TABLE 5.5 VISITATION BY MONTH – PORTLAND-VANCOUVER-HILLSBORO, OR-WA MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 6,395 | 5,362 | 5,595 | 19% | 14% |
| February | 4,077 | 4,061 | 7,072 | 0% | (42%) |
| March | 8,901 | 5,798 | 12,699 | 54% | (30%) |
| April | 7,499 | 2,906 | 6,875 | 158% | 9% |
| May | 7,985 | 4,313 | 6,537 | 85% | 22% |
| June | 9,556 | 9,654 | 9,740 | (1%) | (2%) |
| July | 10,272 | 8,571 | 11,226 | 20% | (8%) |
| August | 10,932 | 8,584 | 10,529 | 27% | 4% |
| September | 6,198 | 4,908 | 6,148 | 26% | 1% |
| October | 5,249 | 7,114 | 6,910 | (26%) | (24%) |
| November | 6,184 | 5,026 | 8,173 | 23% | (24%) |
| December | 7,626 | 5,223 | 7,444 | 46% | 2% |
| **Total** | **90,874** | **71,520** | **98,948** | **27%** | **(8%)** |



## San Diego-Carlsbad, CA

The San Diego MSA was the 13th largest MSA for visitation to the Redding area in 2021, with nearly 39,000 visits in 2021. The visitation by month for the San Diego MSA is represented in **Table 5.6**. Visitation increased in six months of 2021; on average, visitation for 2021 was up 1 percent compared to 2019. While the Redding-San Diego market is typically fairly summer seasonal with 43 percent of visitation in 2019 occurring from June to August, in 2021, visitation during the summer months represented only 33 percent of visitation, indicating demand was more year-round. As visitation and travel demand continues to improve, nonstop service to San Diego International Airport (SAN) is possible.

## Phoenix-Mesa-Scottsdale, AZ

The Phoenix MSA was the 19th largest MSA for visits in 2021. The visitation by month is represented in **Table 5.7**. Visitation was down in every month of 2021 compared to the same months in 2019. Visitation averaged a 38 percent decline in 2021 compared to 2019. RDD does not have service to the Phoenix metro area. While nonstop service by American Airlines to Phoenix-Sky Harbor International Airport (PHX) remains a top opportunity, visitation will likely need to return to pre-pandemic levels for the service to be successful and for American to consider entering the market.

**TABLE 5.6 VISITATION BY MONTH – SAN DIEGO-CARLSBAD, CA MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 2,857 | 3,064 | 2,440 | (7%) | 17% |
| February | 1,799 | 2,062 | 1,660 | (13%) | 8% |
| March | 3,050 | 2,096 | 1,502 | 46% | 103% |
| April | 2,954 | 999 | 2,050 | 196% | 44% |
| May | 3,593 | 1,963 | 1,938 | 83% | 85% |
| June | 4,229 | 4,513 | 4,512 | (6%) | (6%) |
| July | 4,460 | 6,501 | 6,856 | (31%) | (35%) |
| August | 4,155 | 5,050 | 5,403 | (18%) | (23%) |
| September | 2,855 | 5,397 | 3,268 | (47%) | (13%) |
| October | 2,452 | 2,887 | 2,007 | (15%) | 22% |
| November | 3,134 | 2,925 | 3,196 | 7% | (2%) |
| December | 3,383 | 4,441 | 3,856 | (24%) | (12%) |
| **Total** | **38,921** | **41,898** | **38,688** | **(7%)** | **1%** |

**TABLE 5.7 VISITATION BY MONTH – PHOENIX-MESA-SCOTTSDALE, AZ MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 1,532 | 2,291 | 3,113 | (33%) | (51%) |
| February | 1,741 | 1,894 | 3,687 | (8%) | (53%) |
| March | 1,919 | 1,656 | 3,187 | 16% | (40%) |
| April | 1,415 | 1,068 | 2,760 | 32% | (49%) |
| May | 2,289 | 1,559 | 3,169 | 47% | (28%) |
| June | 3,036 | 2,133 | 4,576 | 42% | (34%) |
| July | 3,357 | 4,056 | 5,487 | (17%) | (39%) |
| August | 2,249 | 1,458 | 3,314 | 54% | (32%) |
| September | 1,555 | 1,684 | 3,034 | (8%) | (49%) |
| October | 1,870 | 2,357 | 2,324 | (21%) | (20%) |
| November | 1,634 | 1,334 | 2,338 | 22% | (30%) |
| December | 1,819 | 1,664 | 2,215 | 9% | (18%) |
| **Total** | **24,416** | **23,154** | **39,204** | **5%** | **(38%)** |

*With the local market demand, including the surrounding areas, and the connectivity beyond to the east, nonstop DEN service is an opportunity for United Airlines at RDD.*

## Las Vegas-Henderson-Paradise, NV

The Las Vegas MSA was the 28th largest MSA for visitation to the Redding area in 2021 with nearly 16,000 visits. The visitation by month is represented in **Table 5.8**. Visitation was down in every month of 2021 except July, at an average decline of 21 percent compared to 2019. RDD has nonstop service to Las Vegas McCarran International Airport (LAS) by Avelo that began in January 2022. The nonstop service should help visitation demand recovery in 2022.

**TABLE 5.8 VISITATION BY MONTH – LAS VEGAS-HENDERSON-PARADISE, NV MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 929 | 1,289 | 1,205 | (28%) | (23%) |
| February | 1,193 | 1,511 | 1,418 | (21%) | (16%) |
| March | 1,273 | 1,979 | 1,724 | (36%) | (26%) |
| April | 1,222 | 1,015 | 1,336 | 20% | (9%) |
| May | 1,472 | 1,315 | 1,795 | 12% | (18%) |
| June | 1,283 | 1,625 | 2,106 | (21%) | (39%) |
| July | 3,010 | 1,759 | 2,137 | 71% | 41% |
| August | 1,538 | 986 | 1,778 | 56% | (13%) |
| September | 940 | 1,150 | 1,528 | (18%) | (38%) |
| October | 1,251 | 1,334 | 1,306 | (6%) | (4%) |
| November | 760 | 712 | 1,715 | 7% | (56%) |
| December | 952 | 746 | 1,924 | 28% | (51%) |
| **Total** | **15,823** | **15,421** | **19,972** | **3%** | **(21%)** |

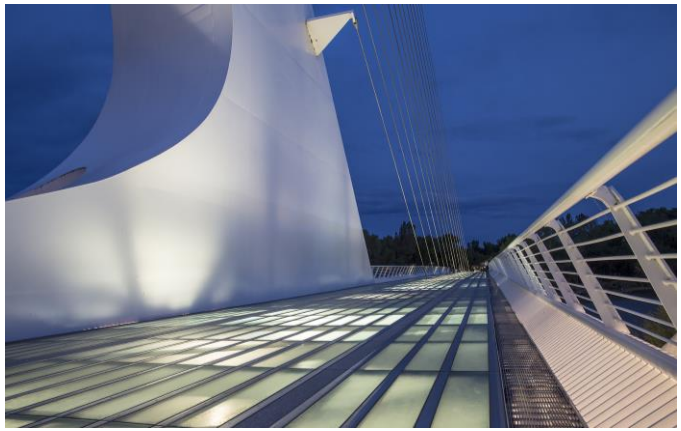
## Denver-Aurora-Lakewood, CO

The Denver MSA was the 50th largest MSA for visitation to the Redding area in 2021, with more than 6,000 visits in 2021. When the other MSAs surrounding Denver are included, including the Boulder, Colorado Springs, Fort Collins and Greeley MSAs, the overall visitation to the Redding area in 2021 increased to nearly 13,000 visits. The visitation by month for the Denver MSA alone is represented in **Table 5.9**. Visitation increased in five months of 2021 compared to 2019; on average, visitation was down 21 percent compared to 2019. Visitation in the combined MSAs, however, increased 2 percent. RDD does not have nonstop service to the Denver metro area. With the local market demand, including the surrounding areas, and the connectivity beyond to the east, nonstop Denver International Airport (DEN) service is an opportunity for United at RDD, particularly with the incentives available through the Small Community Air Service Development Program grant.

**TABLE 5.9 VISITATION BY MONTH – DENVER-AURORA-LAKEWOOD, CO MSA**

| MONTH | YEAR | | | % CHANGE 2021 | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | VS. 2020 | VS. 2019 |
| January | 137 | 359 | 733 | (62%) | (81%) |
| February | 109 | 602 | 242 | (82%) | (55%) |
| March | 274 | 199 | 1,069 | 38% | (74%) |
| April | 565 | 31 | 411 | 1,723% | 37% |
| May | 750 | 302 | 370 | 148% | 103% |
| June | 783 | 270 | 279 | 190% | 181% |
| July | 591 | 248 | 1,034 | 138% | (43%) |
| August | 1,053 | 323 | 817 | 226% | 29% |
| September | 574 | 661 | 372 | (13%) | 54% |
| October | 445 | 412 | 1,004 | 8% | (56%) |
| November | 327 | 475 | 833 | (31%) | (61%) |
| December | 453 | 346 | 523 | 31% | (13%) |
| **Total** | **6,061** | **4,228** | **7,687** | **43%** | **(21%)** |

# CONCLUSIONS



The Redding area has a slight summer-season peak, with June through August accounting for 34 percent of visitation in 2021, up from 31 percent in 2019. July was the peak month for visitation, similar to 2019 and 2020. February was the lowest month for visitation in 2021, a slight shift from 2019 where January was the lowest month. In 2020, with the impacts of COVID-19, April was the lowest month for visitation. The Redding area attracted nearly 2.2 million visits in 2021 from beyond 100 miles. Estimated visitation in 2021 declined 9 percent since 2019 but was up 17 percent since 2020 as the market began to recover from the most significant impacts of the pandemic. By month, visitation was down in 2021 in every month except April that increased slightly compared to 2019. Visitation improved in 2021 in every month compared to 2020, except for January, February, September and October. Many months had double digit percentage increases in 2021 compared to 2020.

Like most markets, the Redding area's visitation is regionalized, with 65 percent of visitation from the West region, up from 59 percent in 2019. The Northwest region was the second highest for visitation with 26 percent of the total, down from 28 percent in 2019. Combined, the top two regions accounted for 91 percent of total visitation. Within those two regions, visitation was heavily weighted to the states of California, Oregon and Washington.

RDD has existing air service to three of the top four MSAs for visitation, including the San Francisco, Los Angeles and Seattle metro areas, as well as service to the Las Vegas metro area, the 28th largest MSA. Supporting the existing service is the top priority for RDD's air service development efforts. As business and leisure demand continues to return, there are several top new market opportunities. Alaska Airlines re-entered the RDD market in June 2021 with service to SEA. As the service gains traction and demand continues to return to the Portland metro area, nonstop PDX service by Alaska is a possibility. Visitation levels supplemented by connectivity to markets to the east supports opportunities for nonstop service by American Airlines to PHX and United Airlines to DEN. In addition, high demand to the San Diego metro area suggests that service to SAN could be successful.

**FOR MORE INFORMATION, PLEASE CONTACT:**

**TRINA FROEHLICH, CPA | 476 SALTY WAY | EUGENE, OREGON 97404**

**541-521-5962 | TRINA.FROEHLICH@MEADHUNT.COM | WWW.MEADHUNT.COM**

Mead & Hunt

# Attachment 2

United Airlines Denver Route Detail

**From:** Corsaro, Vince (OST)
**To:** Wadleigh, Jim
**Subject:** 2019 SCASDP Award and Grant Agreement Scope
**Date:** Wednesday, July 28, 2021 10:12:06 AM

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Dear Jim,

Good morning and congratulations on being awarded a 2019 SCASDP Grant.

As we begin to set up your grant agreement we wanted to make sure that the scope of the agreement covers
the intention of the application that was filed.

For Redding's grant, we would offer the following scope for your approval:

Minimum revenue guarantee (MRG) and associated marketing program to recruit, initiate and support new air service to Denver (DEN).

If this scope proposal is acceptable, please send a confirmation e-mail to me and brooke.chapman@dot.gov no later than Monday, August 2, 2021.

I will be away from the office the rest of this week. If you have any questions concerning this e-mail, please call Brooke Chapman at 202-355-0577.

We appreciate your quick response.

Thank you.

Vince Corsaro
U.S. Department of Transportation
Transportation Industry Analyst
Small Community Air Service Development Program
Office of Aviation Analysis
1200 New Jersey Avenue, SE
Room 86-474
Washington, DC 20590
202-366-1842

Order 2021-7-13
Served: July 27, 2021

**UNITED STATES OF AMERICA**
**DEPARTMENT OF TRANSPORTATION**
**OFFICE OF THE SECRETARY**
**WASHINGTON, D.C.**

Issued by the Department of Transportation
on the 27th day of July, 2021

| | |
|---|---|
| In the Matter of the<br><br>**SMALL COMMUNITY AIR SERVICE DEVELOPMENT PROGRAM**<br><br>under 49 U.S.C. § 41743 *et seq.* | **DOCKET DOT-OST-2020-0231** |

# ORDER AWARDING GRANTS

## Summary

By this Order, the U.S. Department of Transportation (the Department) awards 22 grants under the Small Community Air Service Development Program ("Small Community Program" or "SCASDP") benefitting communities in 22 states to assist with the implementation of the air service initiatives proposed in their grant applications. The communities, the amount of funding awarded to the communities, and brief descriptions of the projects are listed in the Appendix to this Order. Award recipients must affirm their grant awards by entering into grant agreements, obligating the funds, with the Department. Award recipients may not seek to be reimbursed funds under the Small Community Program until they affirm their grant awards.

## Background

The Small Community Program was established by the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Pub. L. No. 106-181), reauthorized by the Vision 100-Century of Aviation Reauthorization Act (Pub. L. No. 108-176), and subsequently reauthorized by the FAA Modernization and Reform Act of 2012 (Pub. L. No. 112-95), as amended, the Disaster Tax Relief and Airport and Airway Extension Act of 2017 (Pub. L. No. 115-63), and the FAA Reauthorization Act of 2018 (Pub. L. No. 115-254) (FAA 2018).[1] Authorization for this program is codified at 49 U.S.C. § 41743.

[1] FAA 2018 made a number of structural and technical changes to the program that apply to grants beginning in FY 2018 and that are reflected in this Order.

The Small Community Program is authorized to receive appropriations under 49 U.S.C. § 41743(e)(2). Appropriations are provided for this program for award selection in FY 2019 pursuant to the Consolidated Appropriations Act, 2019 (Pub. L. No. 116-6). See footnote 9 below for a breakdown of the sourcing of monies for this FY 2019 selection.

When selecting applicants to participate in the Small Community Program, the Department is statutorily required to apply the following criteria for participation:

1. The airport serving the community or consortium is not larger than a small hub airport, as determined using the FAA's most recently published classification effective on the date that the community or consortium files an application;
2. The airport has insufficient air carrier service or unreasonably high air fares;
3. The airport presents characteristics, such as geographic diversity or unique circumstances, that demonstrate the need for, and feasibility of, the Small Community Program;
4. An applicant may not receive an additional grant to support the same project more than once in a 10-year period, except in certain circumstances;[2] and
5. An applicant may not receive an additional grant prior to the completion of its previous grant.[3]

The statute further provides that no more than four communities or consortia of communities, or a combination thereof, from the same state may be selected to participate in the program in any fiscal year, and no more than 40 communities or consortia of communities, or a combination thereof, may be selected to participate in the program in each year for which the funds are appropriated.

In addition, the statute directs the Department to give priority to those communities or consortia of communities[4] where: (a) air fares are higher than the average air fares for all communities; (b) a portion of the cost of the activity contemplated by the community is provided from local, non-airport revenue sources; (c) a public-private partnership has been or will be established to facilitate air carrier service to the public; (d) improved service will bring the material benefits of scheduled air transportation to a broad section of the traveling public, including businesses, educational institutions, and other enterprises whose access to the national air transportation system is limited; (e) the assistance will be used to help restore scheduled passenger air service that has been terminated; [5] (f) the funds will be used in a timely manner; [6] and (g) multiple communities cooperate to submit a regional or multistate application to consolidate air service into one regional airport.

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[2] As provided under 49 U.S.C. § 41743(c)(4)(C), the Department may waive the same project limitation.

[3] 49 U.S.C. § 41743(c)(1)-(4).

[4] A consortium of communities is defined as a single entity. 49 U.S.C. § 41743.

[5] 49 U.S.C. § 41743(c)(5)(E).

[6] 49 U.S.C. § 41743(c)(5)(F).

The Department is authorized to award grants to communities that seek to provide assistance to:

- An air carrier to subsidize service to and from an underserved airport for a period not to exceed three years;
- An underserved airport to obtain service to and from the underserved airport; and/or
- An underserved airport to implement such other measures to improve air service both in terms of the cost of such service to consumers and the availability of such service, including improving air service through marketing and promotion of air service and enhanced utilization of airport facilities.[7]

On November 24, 2020, the Department issued Order 2020-11-5 in this Docket, soliciting grant proposals from communities interested in receiving grant funding for FY 2019.

On December 27, 2020, the President signed into law the Coronavirus Response and Relief Supplemental Appropriations Act, 2021 (Pub. L. No. 116-260). The law included a new appropriation of up to $5 million for SCASDP, and required the Department "to give priority to communities or consortia of communities that have had air carrier service reduced or suspended as a result of the coronavirus pandemic" for this funding and for funding for FYs 2019, 2020, and 2021. It also required that the Department publish procedures to allocate this funding no later than 60 days after enactment of the law and award the funds to grantees as soon as practicable.[8]

On January 19, 2021, the Department issued Order 2021-1-4 in this Docket, amending Order 2020-11-5 to incorporate the relevant changes set forth in Pub. L. No. 116-260, and to set a new due date for applications filed in this proceeding. Specifically, that Order:

- raised the total funding for FY 2019 grant awards from up to $13 million to up to $18 million;[9]

- added a new Priority Selection Criterion to read as follows: "The assistance will be used to help restore scheduled passenger air service that has been reduced or suspended as a result of the 2020 Coronavirus pandemic;[10]

- changed the due date for applications for grant awards from January 26, 2021 to March 1, 2021; and

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[7] 49 U.S.C. § 41743(d).

[8] See Pub. L. No. 116-260, Division M, "Coronavirus Response and Relief Supplemental Appropriation Act, 2021," Title IV, Section 4.

[9] These monies are sourced as follows: $10 million in FY 2019 funding (Pub. L. No. 116-6), up to $5 million in Coronavirus Response and Relief funding (Pub. L. No. 116-260), and up to $4 million in FY 2020 funding (Pub. L. No. 116-94). The exact amount available in this proceeding, not to exceed $18 million, is dependent on the Department's final allocation of a portion of the Coronavirus Response and Relief funds among various programs.

[10] See Order 2021-1-4 for a further explanation of this new Priority Selection Criterion. The other Priority, and Secondary Selection Criteria applicable to this proceeding are described in Order 2020-11-5, pages 9 – 12.

- increased the maximum number of pages that an application may contain from 20 to 21, to allow applicants extra space to include, where relevant, information related to the new priority selection criterion.

Order 2020-11-5, as amended by Order 2021-1-4, will be referred to as the "Solicitation Order" in the context of this proceeding.

The Solicitation Order required each applicant to submit a completed Standard Form 424 and a Summary Information schedule to www.grants.gov. Communities were requested to provide information that would help in the consideration of their grant requests, including details about their existing air services, historical air services, current air service needs and deficiencies, a full description of the community's proposal, plans for implementation, funding requirements, and plans for monitoring the success of the project, including modifying or discontinuing funding if the project is not meeting expectations.

Drawing on the Department's learnings and experience from previous years, the Solicitation Order discussed various issues relating to project types and the grant application process, including the sources of local funding, the consideration of in-kind contribution, the use of grant funds, and the eligibility to participate by past grant recipients. The Solicitation Order further emphasized that communities would be expected to meet the financial-contribution commitments that they include in their proposals.

**Grant Applications**

In response to the Solicitation Order, the Department received 78 grant applications from communities in 38 states. Collectively, these communities sought more than $58 million in Federal assistance to support new and ongoing air service development projects. Seven of the 78 applications did not meet the basic eligibility criteria for participation outlined above and were determined ineligible for consideration.

As in previous years, this year's eligible applications included proposals for feasibility studies, new or expanded service initiatives, marketing, and assorted combinations thereof. These applicants provided information on historical and current air service and air fare issues facing their communities, the economic benefits of air service, proposed initiatives to remedy air service or air fare problems, and arguments in support of their proposals. Nearly all the communities pledged local cash and/or in-kind contributions from local, state, airport, or private sources to complement their requests for Federal assistance.

The large majority of applicants specified the need to attract new and/or additional air services to their communities. Nearly all of the applications discussed the impacts of the COVID-19 pandemic on air services at applicant airports and communities. Similar to previous years, a majority of applicants also proposed to implement their projects using revenue guarantees or subsidies, together with a variety of marketing and promotional initiatives. A critical component of most proposals was funding to support community-based marketing and promotional initiatives to stimulate demand and community awareness of local airport services. These efforts are directed at publicizing not only the availability of air services, but also the convenience of using the local airport compared to more congested air service hubs or other larger airports in the

region. Almost all applicants cited reductions and/or suspensions of service due to the coronavirus pandemic, arguing that this factor, in particular, combined with ongoing industry issues they have been facing, prompted the need for Federal assistance in order to help communities in these unique circumstances.

**Grant Awards**

The Small Community Program is unique in that it encourages and affords communities the opportunity to develop their own solutions to their air service problems based on their particular needs and circumstances. By providing communities the opportunity to develop and implement air service projects tailored to their individual needs, the program aims to maximize the potential for success in the communities' endeavors. Since the program's inception, the Department has sought to maximize the number of participating communities, promote geographic diversity of the selections, and support a variety of solutions to the problems identified by applicants in order to provide a wide range of approaches for dealing with the challenges faced by similarly-situated communities.

With these considerations in mind, we are selecting 22 grant proposals with the objective of entering into grant agreements with the communities identified in the Appendix to this Order. Award recipients must enter into grant agreements with the Department before the recipients may seek to be reimbursed expenses under their Small Community Program projects. In addition, grant recipients are subject to all grant conditions and assurances required by Federal law, regulations, and executive orders.[11] The Department's grant agreements will be transmitted to the selected communities subsequent to the issuance of this Order.[12]

The proposals we selected meet the purpose of the statute and provide opportunities to test a variety of approaches to improving small community air service in many regions of the country. The attached Appendix provides a brief description of each project and the amount of funding each community requested. As an overview, all of the awards are being made to communities proposing revenue guarantees or marketing, or revenue guarantees with marketing, as a means to attract new service, to support existing service, or to restore lost service.

The selected communities are: Mobile, AL; Texarkana, AR; Redding, CA; Gunnison, CO; St. Augustine, FL; Georgia Department of Transportation, GA; Baton Rouge, LA; Kalamazoo, MI; Duluth, MN; Springfield-Branson, MO; Helena, MT; Jacksonville, NC; Manchester, NH; Hobbs, NM; Binghamton, NY; Akron-Canton, OH; Redmond, OR; Williamsport, PA; Killeen, TX, Newport News, VA; Appleton, WI; and Huntington, WV.

All of the selected communities are contributing financial resources to their respective grant projects. The local resources reflect a commitment that is important to the potential success of

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[11] *See* http://www.transportation.gov/policy/aviation-policy/small-community-rural-air-service/SCASDP for applicable conditions and assurances.

[12] As in previous years, the Department's staff will, at the request of any non-selected applicant community, conduct a debriefing with representatives of that community to review and provide feedback on its application in this proceeding. Any affected community wishing to avail itself of a debriefing should contact the Associate Director, Brooke Chapman, at Brooke.Chapman@dot.gov.

the proposed initiatives. Moreover, nearly all of the communities have (1) established robust public-private partnerships to enhance community participation and facilitate access to air services, (2) provided a specific plan and timetable for using their grant funds in a timely manner, and (3) have provided a letter of support from an interested air carrier.

**Air Service Development Zone**

The statute directs the Department to designate an airport in one community awarded a grant under this program as an "Air Service Development Zone" (ASDZ), and to work with the community or consortium on means to attract business to the area surrounding the airport, to develop land-use options for the area, and to provide data, working with the Department of Commerce and other Federal agencies.[13] Only one SCASDP grant recipient may hold an ASDZ designation at any one time. As we noted in Order 2020-11-5, an FY 2018 SCASDP grant recipient, Grand Junction Regional Airport, Grand Junction, CO, is a current ASDZ designee, and the Department therefore did not solicit a new ASDZ designee in this proceeding.

**Grant Agreements**

As noted above, the Department will execute grant agreements with each recipient. The Department stated in the Solicitation Order that communities must establish milestones to monitor the progress of the proposed projects to determine whether amendments are necessary or whether the grant agreement should be terminated. As done in the past, milestones and progress reporting requirements (modified as discussed below) will be included in the grant agreements. Federal funds under this grant program are disbursed on a reimbursable basis, with the communities expending funds for the grant project and then seeking reimbursement. Expenditures incurred by third parties are not directly reimbursable to such third parties under this grant program.[14] In seeking reimbursements, grant recipients must provide invoices or other evidence of the expenditure, details about the expenditure and how it relates to the grant project, and evidence of payment. In addition, the legal sponsor is required to certify that each invoice is relevant to the authorized grant project and has been paid. Communities will be required to comply fully with the terms of their proposals and the grant agreements.

We will issue Small Community Program grants for three different durations: three years for grants involving studies, four years for those involving marketing, and five years for those including revenue guarantees.[15]

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[13] 49 U.S.C. § 41743(h).

[14] The legal sponsor must have paid all costs associated with eligible invoices, including costs incurred by third parties, prior to seeking reimbursement from the Department.

[15] *See* Order 2018-7-10, p. 6, and Order 2020-2-14, p. 5. Title 49 U.S.C.§ 41743(d)(1) states that the Secretary may issue grants "to provide assistance to an air carrier to subsidize service to and from an underserved airport for a period not to exceed 3 years…." The three-year limitation applies only to the duration of the revenue guarantee itself, beginning when the subsided service actually commences. Our five-year grant duration recognizes that significant time is often spent by communities in arranging for a revenue guarantee with an air carrier before such service can begin, and it gives additional time for communities and air carriers to complete this preliminary process.

As we did for the FY 2017 and FY 2018 grants, we will provide for a community to seek and obtain a first grant extension (if it deems such an extension necessary) by allowing it to obtain a self-initiated one-year extension of its grant if it files with the Department, no later than 60 days prior to the expiration date of its grant agreement, a written request for such extension.[16]

**Reporting Requirements**

Unless otherwise noted, each grantee must submit semi-annual reports on the progress made during the previous period in implementing its grant project. In addition, each community will be required to submit a final report on its project to the Department, and 10 percent of the grant funds will not be reimbursed to the community until such a final report is received. Additional information on award administration for selected communities will be provided in their grant agreements.

**ACCORDINGLY,**

1. We select the communities listed in the Appendix to receive grant awards under the Small Community Air Service Development Program as described in this Order;

2. Grant recipients shall be subject to all grant conditions and assurances that will be attached to and incorporated in the grant agreements (also available at http://www.transportation.gov/policy/aviation-policy/small-community-rural-air-service/SCASDP). In addition, to the extent that the grant agreement permits expenditure of the awarded Small Community Program funds in any manner that would not be permitted for funds received as part of Federal Aviation Administration's Airport Improvement Program (AIP), such permission is strictly limited to the expenditure of the Small Community Program funds awarded under the grant agreement. Nothing in the grant agreement negates the recipient's obligations to fully comply with FAA Order 5100.38D and all applicable federal law;

3. Each award recipient must affirm this award by entering into a grant agreement with the Department. Award recipients may not seek to be reimbursed under the Small Community Program until they affirm their grant awards;

4. Each award recipient whose grant agreement has not yet reached its initial termination date may obtain a self-initiated one-year extension of its grant if it files with the Department (Office of Aviation Analysis, X-55), no later than 60 days prior to the expiration date of its grant agreement, a written request for such extension; and

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16 *See* Order 2018-7-10, p. 6, and Order 2020-2-13, p. 6.

5. A copy of this Order will be served on the legal sponsor for each applicant in this proceeding.

By:

Carol A. (Annie) Petsonk
Deputy Assistant Secretary
for Aviation and International Affairs

(SEAL)

*An electronic version of this document is available at http://www.regulations.gov*

Appendix

| Appendix | Order 2021-7-13 | | |
|---|---|---|---|
| **State** | **Community** | **Federal Amount Awarded** | **Project Description** |
| AL | Mobile | $1,000,000 | The funding will be used for a revenue guarantee, marketing program and start-up cost offsets for new nonstop service to Washington-Dulles International Airport (IAD), using United Airlines. The community states that its existing service has been drastically reduced due to the pandemic, making it difficult for passengers to find availability. The community believes that service to IAD will add needed capacity. The community will provide significant local funding for the proposal and the airport has committed support for the new route after the grant ends. |
| AR | Texarkana | $884,722 | The funding will be used for a revenue guarantee, marketing, and start-up cost offsets for new daily regional jet service between Texarkana and Houston, TX by SkyWest Airlines/United Express. The community states that this service would open a second route to a second hub, with a new airline. It further states that it would help Texarkana retain service, as many potential passengers currently use other airports. SkyWest has filed in support. The community is isolated from hub air services. |
| CA | Redding | $760,000 | The funding will be used for a revenue guarantee for new nonstop service to Denver, CO, using United Airlines/SkyWest. The community believes that its proposal would provide strong eastbound connecting opportunities. United and SkyWest provided letters of support. The community has arranged for a large amount of local funding, demonstrating strong community support for the proposal. |
| CO | Gunnison | $600,000 | The funding will be used for a revenue guarantee and marketing to expand American Airlines services from Dallas/Ft. Worth International Airport to include daily summer service. The community states that its proposal would address high airfares, and year-round access to American's Dallas/Ft. Worth hub would provide travelers with one-stop service to many of Gunnison's other high-demand destinations. American supplied a letter in support. The community will provide significant local funding for the proposal and the airport has high air fares. |
| FL | St. Augustine | $700,000 | The funding will be used for a revenue guarantee and marketing for nonstop service to Charlotte, NC, on American Airlines. The community states that the proposal will re-introduce scheduled service to the community. American Airlines has provided a letter of support for this application. The community will provide significant local funding for the proposal. |

| **Appendix** | **Order 2021-7-13** | | |
|---|---|---|---|
| **State** | **Community** | **Federal Amount Awarded** | **Project Description** |
| GA | Georgia DOT | $650,000 | The funding will be used for a marketing program to support several small-hub and non-hub airports. The consortium states that it seeks to provide an educational program that describes airport efforts to reduce the potential spread of COVID, and also institute a "Fly Local/Fly Georgia" marketing program to retain local passengers and reduce leakage to airports in surrounding states. The State is providing significant local funding for the project. |
| LA | Baton Rouge | $1,000,000 | The funding will be used for a revenue guarantee, marketing, start-up cost offsets and ground handling fee waivers to provide new air service to the Washington D.C. area, including all three major D.C.-area airports. The community states that service has been reduced significantly during COVID pandemic. The proposal will provide service to the Northeast portion of the US. American Airlines has provided a letter of support. The community is providing significant local funding and it is somewhat isolated. |
| MI | Kalamazoo | $1,000,000 | The funding will be used for a revenue guarantee for service to Charlotte, NC. The community seeks to gain service to Charlotte, as a potentially robust connecting point. American Airlines provided a letter of support. Current fares at the community are higher than the national average. |
| MN | Duluth | $750,000 | The funding will be used for a revenue guarantee for new nonstop service to Denver, CO. The community states that adding Denver service would not only serve the estimated large Denver demand in the region, but would also improve connectivity to other destinations. SkyWest Airlines filed in support. The community has arranged for a large amount of local funding, demonstrating strong community support for the proposal and it is isolated from other airports. |

| Appendix | Order 2021-7-13 | | |
|---|---|---|---|
| **State** | **Community** | **Federal Amount Awarded** | **Project Description** |
| MO | Springfield-Branson | $750,000 | The funding will be used for a revenue guarantee and marketing to initiate new service to Washington Reagan National Airport on American Airlines. The community states that the new service would benefit both the business community and the tourism sector. The community further states that the service would help to attract more leisure traffic to the tourism-centric area. American Airlines has provided a letter of support for the proposal. The community notes that the proposal would introduce service to the northeast and provide numerous connection opportunities to a part of the country that is currently deficient. The community has arranged for a large amount of local funding and it is isolated from larger hub airports. |
| MT | Helena | $1,004,743 | The funding will be used for a revenue guarantee, marketing, and start-up support for new daily regional jet service to Phoenix Sky Harbor with American Airlines. The community notes that the region has experienced a large increase in tourists and people relocating to the area since the COVID pandemic began. It believes that Phoenix, its second largest hub destination without direct air service, will make for a popular route. American Airlines supports the request. The community is remote. |
| NC | Jacksonville | $700,000 | The funding will be used for a revenue guarantee, marketing, and fee waivers for new nonstop service to Dallas/Ft. Worth International Airport (DFW). The community states that while air service levels have been resilient throughout the COVID pandemic, service to DFW would complement existing service on the east coast by improving access to western United States and international markets. American Airlines has provided a letter of support. The community will provide significant local funding for the proposal. |
| NH | Manchester | $425,000 | The funding will be used for a marketing program to support an ultra-low-cost carrier (ULCC). The community believes that the presence of an ULCC would help retain passengers. Spirit Airlines has filed a letter of support. The community has arranged for a large amount of local funding, demonstrating strong community support for the proposal and the airport has higher air fares. |

| **Appendix** | **Order 2021-7-13** | | |
|---|---|---|---|
| **State** | **Community** | **Federal Amount Awarded** | **Project Description** |
| NM | Hobbs | $800,000 | The funding will be used for a revenue guarantee and marketing to attract United Airlines to re-start service to Denver, CO, which it cancelled during the COVID pandemic. Hobbs is relatively isolated, with the nearest small hub airport roughly 100 miles away. The community states that United began Denver service in October 2019, and that it had good load factors until its cancellation in April 2020. United Airlines provided a support letter. The project satisfies the new COVID air service restoration priority, the community is contributing significant local funding, and the airport has high air fares. |
| NY | Binghamton | $1,000,000 | The funding will be used for a revenue guarantee for nonstop service to a Washington, DC area airport. The community states that, at present, it only has service to one destination on one air carrier. It states that service to a Washington, DC airport, with strong connecting opportunities, will allow the community to regain a significant portion of the passengers lost, due to service reductions. SkyWest Airlines has provided a letter of support. Fares at the community are higher than the national average. |
| OH | Akron-Canton | $850,000 | The funding will be used for a revenue guarantee to assist with the restoration of service between Akron and Houston, TX. The community states that service to Houston was suspended in March 2020 due to the COVID pandemic, and that new and/or restored air service would benefit a significant segment of its population. United Airlines has provided a letter of support. The proposal satisfies the COVID air service restoration priority and the community has high air fares. |
| OR | Redmond | $800,000 | The funding will be used for a revenue guarantee for service to Dallas-Ft. Worth International Airport (DFW). The community believes that fares from Redmond to DFW and top connecting markets are higher than at nearby regional airports, and states that its proposed service will help reduce fares and benefit multiple businesses in the region, from tourism to tech to manufacturing, given DFW's connectivity to additional markets. American Airlines filed a letter in support. The community will provide significant local funding for the proposal. |

| **Appendix** | **Order 2021-7-13** | | |
|---|---|---|---|
| **State** | **Community** | **Federal Amount Awarded** | **Project Description** |
| PA | Williamsport | $950,000 | The funding will be used for a revenue guarantee for new network-branded regional jet service from Williamsport to Washington, DC, and Chicago, IL. The community states that, at present it has service to only one destination on one carrier, and it is concerned about its continued viability given the effects of the COVID pandemic. SkyWest Airlines provided a support letter and would operate under the United Express brand to both airports. The community has arranged for a large amount of local funding, demonstrating strong community support for the project. |
| TX | Killeen | $1,000,000 | The funding will be used for a revenue guarantee, marketing, and startup cost offset for nonstop service to Denver, CO. The community states that obtaining service to Denver will provide great benefit to the community, including the United States military due to its proximity to Fort Hood. New flights to Denver would create service and connections to the west, which is currently deficient at the community. SkyWest Airlines provided a letter of support and the community has air fares higher than the national average. |
| VA | Newport News | $847,646 | The funding will be used for a revenue guarantee for service to Washington Dulles International Airport (IAD) on United Airlines. The community states that nonstop access to IAD will, in addition to benefitting the general public, provide connectivity to government and military agencies that have ties to the DC region. United Airlines filed a letter in support. The community will provide significant local funding for the proposal and it has air fares higher than the national average. |
| WI | Appleton | $750,000 | The funding will be used for a revenue guarantee, marketing, start-up cost offsets, and fee waivers for service to Dallas/Fort Worth International Airport (DFW) on American Airlines. The community states that United's non-stop service to Denver was cancelled and Delta reduced flights to Minneapolis St. Paul in April 2020 due to the COVID pandemic. It further states that the proposed new nonstop service to DFW would replace the directional hub service lost. American Airlines has filed a letter in support. The community will provide significant local funding for the proposal. |

| **Appendix** | **Order 2021-7-13** | | |
|---|---|---|---|
| **State** | **Community** | **Federal Amount Awarded** | **Project Description** |
| WV | Huntington | $750,000 | The funding would be used for a revenue guarantee, marketing, and fee waivers for nonstop service to Washington, DC and Chicago, IL. The community states that it currently has service to only one hub destination, but it is concerned that the service may be permanently reduced or suspended, as service was reduced significantly during the COVID-19 pandemic. SkyWest Airlines provided a letter of support. The community has arranged for a large amount of local funding, demonstrating strong community support for the proposal. |

**Daniel Malinowski**
Managing Director, Domestic Network Planning
Network Planning and Strategy

Ms. Brooke Chapman
Associate Director
US Department of Transportation
Office of the Secretary
1200 New Jersey Avenue, SE
W Building, W86-490
Washington, DC 20590

**Subject: United Airlines' Letter of Support for Redding Municipal Airport's 2020 Small Community Air Service Development Program Grant Application**

Dear Ms. Chapman,

United Airlines supports the Small Community Air Service Development Program (SCASDP) grant application submitted by Redding Municipal Airport (RDD). Air service in small communities is critical to the economic vitality of the community, and we feel that the RDD application for service to Denver International Airport (DEN) is an important addition for the entire region.

United has been very active in adding service to smaller communities across the nation and believes that the Redding community today is underserved and offers an opportunity for us to bring our quality air service to the region. While we believe that RDD-DEN service could be successful, any new service, especially introducing a new airline to a community, has inherent risk and significant costs. A SCASDP grant award with an associated Minimum Revenue Guarantee would help us to overcome those risks. While United cannot guarantee it will launch service from RDD, the SCASDP grant would greatly increase our interest in entering the market.

We look forward to continuing to work with RDD regarding adding United service to DEN.

Sincerely,

Daniel Malinowski
Managing Director, Domestic Network Planning