2020 Colorado Aviation System Plan

2020 CASP Technical Report

COLORADO
Department of Transportation
Division of Aeronautics

2020 Colorado Aviation System Plan

Prepared for

Colorado Department of Transportation Division of Aeronautics
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Acknowledgements

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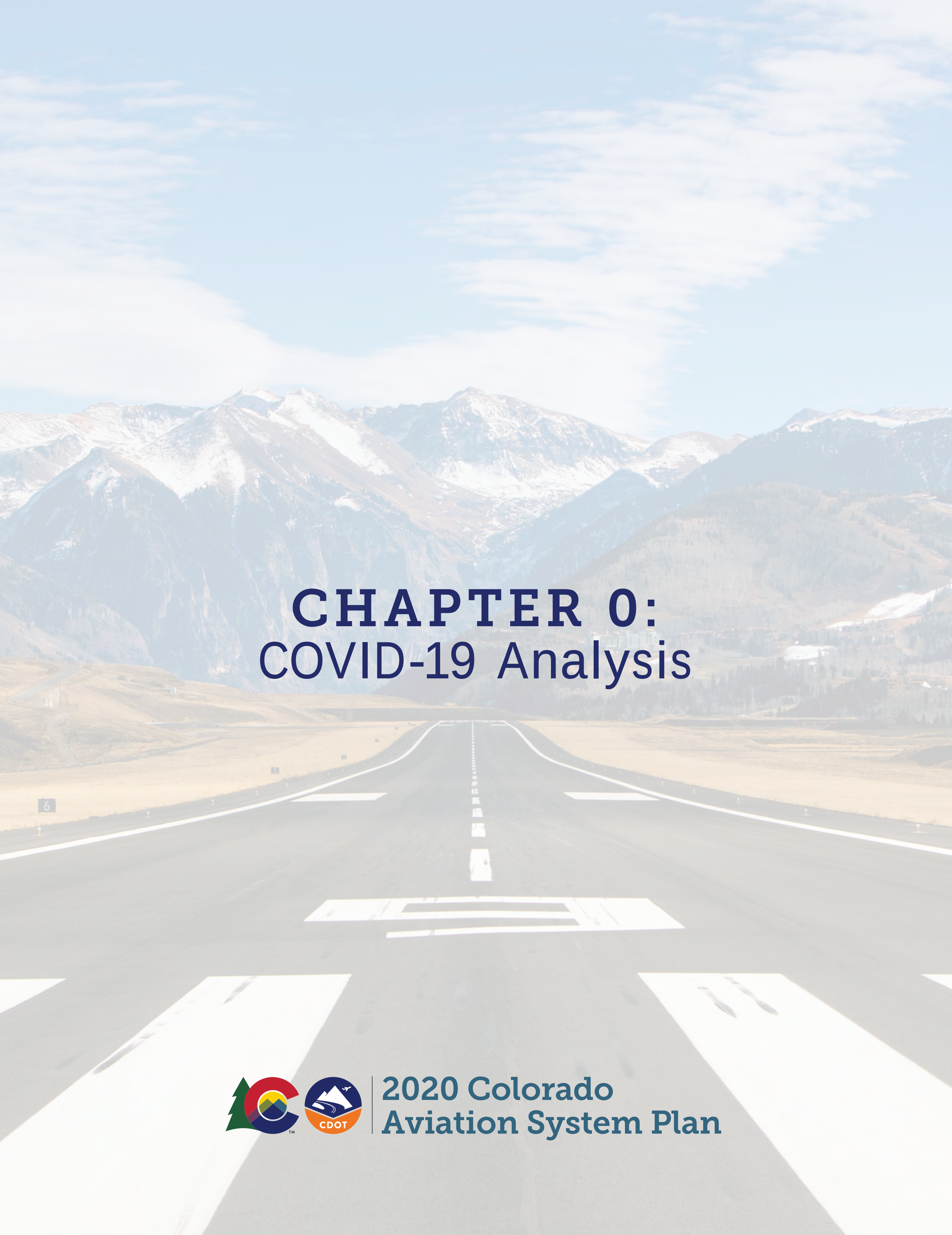

CHAPTER 0:
COVID-19 Analysis

2020 Colorado Aviation System Plan

Chapter 0. COVID-19 Analysis

0.1. Introduction

The 2020 Colorado Aviation System Plan (CASP) and 2020 Colorado Aviation Economic Impact Study (CEIS) were initiated in September 2018 with a scheduled completion of May 2020. However, in the first half of 2020, the novel coronavirus (referred to as COVID-19) pandemic caused significant impacts on the global economy, the aviation industry, and Colorado's airports. The Colorado Department of Transportation (CDOT) Division of Aeronautics determined that an additional analysis of the pandemic and its impacts on the aviation system was needed to provide additional context to readers of the CASP and CEIS.

It is important to note that the circumstances surrounding the COVID-19 pandemic have not necessarily changed the recommendations of the CASP but may alter the timing of CASP recommendations as stability in funding and resources is determined and recovery continues. Furthermore, the findings of the CEIS were based primarily on 2018 data and are therefore accurate, however, are not necessarily reflective of calendar year 2020 impacts. The CEIS is typically updated by the CDOT Division of Aeronautics approximately every five years and the pandemic's impact will be more fully understood at the time of the next study, which is anticipated to occur in the 2023 timeframe.

The resulting analysis is presented in the following sections:

- Overview of the COVID-19 Pandemic
- Aviation Industry Impact
- Impact of the Pandemic to Colorado Airports
- Potential Recovery Scenarios

0.2. Overview of the COVID-19 Pandemic

COVID-19 is an infectious disease caused by a strain of coronavirus called SARS-CoV-2. People infected with COVID-19 can experience mild to severe symptoms that primarily affect the respiratory system. Although most people infected by the virus experience mild to moderate symptoms, older adults and those with underlying health conditions appear to be at a higher risk of experiencing severe illness or death.[1] Symptoms usually appear between two and 14 days after exposure to the virus.[2] The virus is thought to be spread primarily through respiratory droplets produced when an infected person coughs or sneezes. As such, 'social distancing' has become a component of everyday life, as the Centers for Disease Control and Prevention (CDC) recommends that people remain more than six feet away from others, particularly when in public settings.[3]

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[1] Centers for Disease Control and Prevention, (CDC). (June 2020). "Coronavirus Disease 2019 Basics." Available online at https://www.cdc.gov/coronavirus/2019-ncov/faq.html#Coronavirus-Disease-2019-Basics. (Accessed June 2020).
[2] Centers for Disease Control and Prevention. (May 2020). "Symptoms of Coronavirus." Available online at https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html (Accessed June 2020).
[3] Ibid.

The outbreak of COVID-19 was first reported on December 31, 2019 in the city of Wuhan, Hubei Province, China and was first identified as a new strain of coronavirus on January 7, 2020. The first case of COVID-19 in the U.S. was reported in Washington State on January 21, while the first recorded COVID-19 related death in the U.S. occurred on February 29. The virus began to spread rapidly across the country in early March and the World Health Organization (WHO) declared the outbreak a pandemic on March 11. By March 27, there were more than 100,000 cases reported in the U.S., and on April 28, the U.S. became the first country in the world to surpass 1 million confirmed cases.[4] According to Johns Hopkins University, there are more than 1.841 million COVID-19 cases and 106,000 COVID-19 related deaths in the U.S., as well as 6.445 million total cases around the globe as of June 3, 2020.[5] Through the remainder of June and into early July, U.S. COVID-19 cases continue to increase at dramatic rates and there are no estimates of when the situation may be resolved.

The spread of COVID-19 has brought global travel to a standstill as travel advisories and bans have been issued around the globe. The White House issued the first travel restriction between China and the U.S. on January 31 and expanded the restrictions to Iran, Italy, and South Korea on February 29. By March 11, travel restrictions were announced between the U.S. and continental Europe. On March 18, the U.S. and Canada agreed to close the border for all non-essential travel. The following day, the U.S. State Department raised the global travel advisory to level four, warning against all international travel. As March progressed, dozens of states closed public schools and universities and issued stay-at-home orders that prohibited non-essential business or travel.[6] By mid-April 2020, 45 states had executed some form of quarantine or shelter-in-place orderwhile the remaining five states allowed individual counties and municipalities to impose their own restrictions.

The pandemic has devastated the global economy as millions of businesses around the globe were forced to shut down or severely limit operations because of public health orders and travel bans. The U.S. preliminarily reported that the nation's gross domestic product (GDP) declined 5.0 percent in the first quarter of 2020, the largest quarterly decline since the 2008 Global Financial Crisis. The decline was reflected in the stock market, as the Dow Jones Industrial Average plummeted more than 30 percent between February 14 and March 23, 2020. Furthermore, the Bureau of Labor Statistics reported that 20 million people lost their jobs in April, bringing the total number of unemployed Americans to more than 23 million, approximately 14.7 percent of the total workforce. Globally, it is estimated that trade volumes will decrease between 13 and 32 percent and the global GDP will decline 2.4 percent in 2020.[7] Although it is too early to understand the full scope of the economic impacts of the pandemic, it is clear that the effects will be significant and long-lasting.

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[4] Muccari, R., Chow, D., & Murphy, J. (May 2020). "Coronavirus timeline: Tracking the critical moments of COVID-19". Available online at https://www.nbcnews.com/health/health-news/coronavirus-timeline-tracking-critical-moments-covid-19-n1154341 (Accessed May 2020).

[5] Johns Hopkins University. (June 2020). "COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)." Available online at https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6. (Accessed June 2020)

[6] Muccari, R., Chow, D., & Murphy, J. (May 2020). "Coronavirus timeline: Tracking the critical moments of COVID-19". Available online at https://www.nbcnews.com/health/health-news/coronavirus-timeline-tracking-critical-moments-covid-19-n1154341 (Accessed May 2020).

[7] Congressional Research Service. (June 2020). Global "Economic Effects of COVID-19". Available online at https://fas.org/sgp/crs/row/R46270.pdf. (Accessed June 2020)

0.3. Aviation Industry Impact

The public health restrictions and travel bans resulting from the COVID-19 pandemic have effectively halted global travel and tourism. The United Nations World Tourism Organization (UNWTO) estimated that international tourism revenues would decline as much as 78 percent from the previous year, resulting in a loss of up to $1.17 trillion (U.S. dollars or USD) in 2020.[8] The reduction of travel has caused many airlines, airports, and aviation businesses, as well as other travel-related businesses and those that depend on visitors whether business or leisure, to experience considerable reductions in overall operations and revenues, greatly affecting the aviation industry as a whole. The specific impacts of the pandemic on airlines, airports, and aviation businesses are addressed below, along with the actions that have been taken by aviation stakeholders, elected officials and regulatory agencies such as Congress and the Federal Aviation Administration (FAA) to reduce such impacts.

0.3.1. Airlines

Nearly every airline around the globe has been affected by the pandemic. Given that COVID-19 is spread through primarily coughs and sneezes, passenger aircraft are considered to have a higher risk for virus transmission similar to other enclosed spaces. As the virus spreads around the globe, airline passenger traffic declined rapidly and has remained far below normal for several months. As such, scheduled airline passenger loads have reached record lows and have caused airlines to experience massive losses in revenues. The results have been severe and have caused airlines in the U.S. and around the world to take drastic measures to remain operational. Unfortunately, the impacts of the pandemic have been too great for some airline companies, as four airlines in the U.S. and 12 international airlines have declared bankruptcy to restructure or cease operations altogether since the beginning of the crisis.

0.3.1.1. Passenger Traffic

International passenger enplanements began to decrease in late February while U.S. domestic passenger volumes declined sharply in mid-March. Globally, passenger traffic has witnessed an unprecedented decline as the International Civil Aviation Organization (ICAO) has projected that total 2020 passenger traffic around the globe would decrease up to 62 percent from 2019 totals. If this prediction is accurate, the reduction in passenger traffic during the pandemic would be equal to or greater than the industry impacts of individual previous upsets such as the post-9/11 downturn and the 2008 Global Financial Crisis.

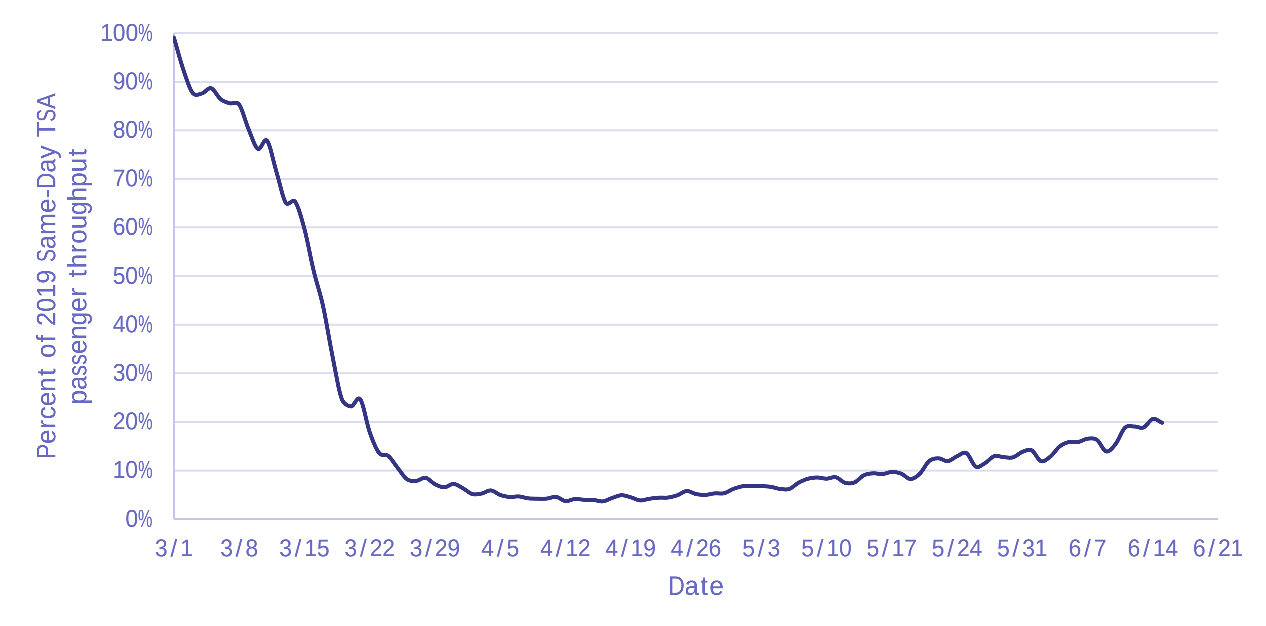
In the U.S., the Transportation Security Administration (TSA) publishes the daily number of passengers that are screened at commercial service airports across the country. The rapid decline in U.S. passenger traffic is illustrated in **Figure 0.1**, as passenger throughput decreased from 99.1 percent of the previous year's traffic on March 1, 2020 to 17.9 percent of the previous year's traffic just three weeks later on March 22. U.S. passenger traffic decreased to its lowest point on April 16, when the TSA screened only 95,085 passengers, approximately 3.6 percent of what the TSA had screened on the same

[8] International Civil Aviation Organization (ICAO). (June 2020). "Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis". Available online at: https://www.icao.int/sustainability/Documents/COVID-19/ICAO%20COVID%202020%2006%2008%20Economic%20Impact.pdf (Accessed June 2020)

day in 2019. As of June 15, passenger traffic had started to trend upwards and was nearing 20 percent of the 2019 throughput.[9]

The average number of passengers on each flight also decreased significantly as demand plummeted during the second quarter of 2020. According to Airlines for America (A4A), the average number of passengers per international flight on January 7, the day the virus was identified in China, was approximately 146 people, while domestic flights the same day carried an average of 98 passengers per flight. By the end of March, average passenger loads dropped to just 26 passengers per international flight and 12.5 passengers per domestic flight. As of June 15, passenger loads had rebounded slightly, as international flights and domestic flights carried an average of 58 and 61 passengers, respectively.[10]

Figure 0.1. 2020 vs. 2019 Same-day TSA Throughput Ratio



Source: Transportation Security Administration, June 2020

0.3.1.2. Revenues

The loss of passenger traffic has had a catastrophic impact on the airlines as ticket sales and fees represent the largest revenue stream for most passenger airlines. ICAO utilized a 2019 study that reported that the global airline industry including passenger and cargo airlines generated approximately $2.7 trillion USD in economic impact in 2016 as a baseline to estimate that airlines worldwide have lost approximately $130 billion USD between January and May 2020. In North America, meanwhile, passenger airlines have lost approximately $29 billion USD from January to May.

[9] Transportation Security Administration (TSA). (June 2020). "TSA checkpoint travel numbers for 2020 and 2019". Available online at: https://www.tsa.gov/coronavirus/passenger-throughput. (Accessed June 2020)
[10] Airlines for America (A4A). (June 2020) "Tracking the Impacts of COVID-19 - Update 76". Available online at: https://www.airlines.org/dataset/impact-of-covid19-data-updates/#. (accessed June 2020).

Additionally, nearly every major airline in the U.S. reported an operating loss in the first quarter and it is likely that this trend will continue when second quarter results are published.

However, the loss of airline revenues due to the pandemic was dampened slightly given strong growth in revenues during the first two months of 2020. Operating revenues of U.S. airlines grew more than 5 percent in January and February and revenues were trending towards setting a new record in 2020. Additionally, the price of JetA fuel plummeted to less than a dollar per gallon in early March, a 50 percent year-over-year decrease from 2019, providing some cost relief for airlines that had not previously hedged fuel. However, JetA prices have begun trending upwards since late May as fuel demand increased.

0.3.1.3. Airline Actions

Since March, airlines have taken a wide variety of actions to increase revenues, reduce costs, and minimize the overall impacts of the pandemic. The most notable change was the drastic reduction of capacity, as airlines around the globe parked aircraft in an effort to decrease operating expenses. In the U.S. alone, the number of idle aircraft increased from 316 on February 29 to 3,204 on May 18, more than 52 percent of the total U.S. airline fleet. Some airlines have opted to temporarily ground aircraft, parking them on unused runways, taxiways, and ramps; while other airlines have chosen to retire older aircraft and entire fleets---moving them to aircraft scrapyards around the country. Airlines have also deferred delivery of new aircraft and cancelled future aircraft orders altogether. As a result, the total number of available seat miles (ASMs) flown by U.S. airlines decreased more than 95 percent in April 2020. However, the decline in passenger traffic has continued to remain below the available capacity, resulting in low load factors and partially-filled aircraft.

Idle aircraft parked at Denver International Airport (Photo courtesy of Denver International Airport Facebook page)

Many airlines have also shifted operations away from scheduled passenger service towards specialized cargo operations. As stay-at-home orders were put in place around the world, global e-commerce activities increased and demand for air cargo surpassed demand for passenger travel. Commercial aircraft were also utilized to carry medical supplies, personal protective equipment (PPE), and personnel to regions that were most impacted by the pandemic. As a result, many airlines began operating cargo-only flights to generate additional revenue beyond normal passenger service. Additionally, some airlines retrofitted aircraft to carry cargo on their main decks through the use of specialized cargo nets and by removing seats from passenger aircraft altogether.[11]

[11] Horton, W. (April 2020). "American Airlines and United Fly More Cargo Flights Than Long-Haul Passenger Services" Available online at: https://www.forbes.com/sites/willhorton1/2020/04/21/american-airlines-and-united-fly-more-cargo-flights-than-long-haul-passenger-services/#163c83b8be6a. (Accessed June 2020).

Airlines have also taken significant actions to reduce staffing costs as they have implemented hiring freezes and cut non-essential employee spending. Many companies have also slashed executive compensation and implemented voluntary leave and early retirement programs in an effort to avoid employee layoffs and involuntary furloughs. Delta Air Lines alone had more than 41,000 employees take voluntary unpaid leave between March and June.[12] Furthermore, airlines that accepted funds from the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) are required to maintain staffing levels and salaries until October 1, 2020. Several airlines have already made announcements about potential staffing cuts after October 1, with many offering voluntary separation programs. Most major airlines also made blanket requests for rent abatement or deferrals at commercial service airports. Additionally, many airline companies have negotiated with vendors including airports, regional airline partners, fuelers, caterers, and ground handlers to reduce operations and expenses.

For those passengers and aircraft still flying, the airline industry looks vastly different from what it did before the pandemic. Airlines have consolidated footprints at airports, closing lounges and ticket counters as well as halting real estate projects. Airlines have also introduced social distancing policies in airports and on-board aircraft, spreading out boarding queues and restricting passengers from booking or sitting in middle seats. Furthermore, airlines have implemented new cleaning policies for aircraft and terminal areas. Many airlines have required passengers to wear masks onboard aircraft and have limited in-flight service, only providing bottled water and prepackaged snacks to reduce contact between passengers and flight crew.

0.3.2. Airports

Many airports around the world have been similarly affected by the decline in passenger traffic caused by the pandemic. Airports have not only seen a decline in revenues from passenger travel, but have also experienced losses from other revenue streams and changes to operations. In response to the significant impacts of the pandemic, governments around the world have put in place laws and measures to support the struggling aviation industry. In the U.S., the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) provided economic relief to millions of individuals and businesses, including airlines and airports. Additionally, the changes in revenue and government funding during the pandemic have had an impact on airports that are undergoing capital improvement projects.

0.3.2.1. Airport Revenues

Commercial service and general aviation (GA) airports alike have both fixed and variable revenue streams, but the way in which these revenues are generated varies between each airport. Variable revenue streams are usually tied directly to passenger and aircraft traffic levels at an airport, while fixed revenues remain constant regardless of the level of activity. Often times, large commercial service and GA airports rely on variable revenue streams by selling JetA and AvGas fuel, charging landing and parking fees for aircraft and automobiles, collecting passenger facility charges (PFCs) or customer facility charges (CFCs), or operating their own concessions and generating revenue directly from passenger sales. If they don't operate their own concessions, including fuel, they may get a percentage of the business's revenues, also a variable stream. Smaller airports that have less activity

[12] Delta Air Lines. (June 2020). "Business Update & Clean Experience" (Accessed June 2020).

usually rely more on fixed revenue streams including land leases to fixed-base operators (FBOs), flight schools, maintenance, repair and overhaul (MRO) shops, and other aviation businesses.

Given the variation in how airports generate revenues, the impacts of the pandemic on airports have differed greatly among different classifications of airports. It is still too early to quantify the specific impacts of the pandemic on GA and commercial service airports; however, trends are beginning to emerge in how airports are being impacted. Many international airports that rely on high levels of passenger and aircraft traffic have experienced massive revenue losses. Additionally, airports that have commercial service have experienced further loss in revenues as the airlines have requested rent deferrals and abatements. However, some airports that primarily rely on cargo or GA traffic have seen less significant negative impacts. Smaller airports with less activity that rely more on land and terminal leases to generate revenues have been impacted less than larger airports and in some cases, have seen no change whatsoever.

0.3.2.2. Operations

In addition to the loss of revenues, many airports have experienced changes to operations during the COVID-19 pandemic. As most airports are publicly owned, they are subject to state and local regulations regarding social distancing and closure of non-essential businesses. Given this, many airports introduced new policies including social distancing and face covering requirements, new cleaning procedures, and additional screening to determine if airport users have been exposed to or infected by COVID-19.

Although nearly every publicly owned airport in the U.S. has been considered an essential business that should remain open, certain facilities on airports have had to close, leading to drastic operational changes both in the air and on the ground. In late March, outbreaks of COVID-19 were reported at multiple air traffic control towers and air route traffic control centers, leading to the closure of the facilities. In turn, several airports and sections of airspace, most notably New York's John F. Kennedy International Airport, were forced to temporarily operate as uncontrolled airspace while controllers were tested and moved to backup facilities.[13] Airports have also had to close facilities in terminals including lounges, restaurants, and duty-free shops to remain in compliance with state and local ordinances. Additionally, some smaller GA airports have closed passenger terminals to the public altogether, only allowing incoming pilots and passengers to use basic amenities. Airports around the globe have also had to close portions of their airfields, including runway and taxiways, to provide space to park thousands of idle passenger aircraft.

0.3.2.3. CARES Act

On March 27, 2020, in consideration of the magnitude of the pandemic's impacts on airports and airlines, President Trump signed into law the Coronavirus Aid, Relief, and Economic Security Act (CARES Act or the Act). The CARES Act allotted $10 billion in funds to the FAA to disburse to provide economic relief to eligible airports affected by the pandemic. Furthermore, the FAA is using CARES Act

[13] Pallini, Thomas. (March 2020). "17 air traffic control centers have been temporarily closed after workers tested positive for coronavirus, highlighting a vulnerability in air travel". Available online at: https://www.businessinsider.com/coronavirus-airports-and-faa-centers-temporarily-closed-for-cleaning-2020-3. (Accessed June 2020)

funds to increase the federal share of Airport Improvement Program (AIP) and supplemental discretionary grants already planned for fiscal year 2020 to 100 percent.[14]

Additional funds are also being distributed to all airports that are part of the National Plan of Integrated Airport System (NPIAS). The amount of money each NPIAS airport received from the CARES Act was determined by a variety of formulas. For commercial service airports, 50 percent of the CARES Act funding allocation was determined by the airport's 2018 passenger enplanements number as a percentage of 2018 enplanements at all commercial service airports; while 25 percent of the total allocation was based on the airport's 2018 debt service as a percentage of total debt service at all commercial service airports; and the final 25 percent of the total allocation was based on the airport's 2018 ratio of unrestricted cash reserves to its respective 2018 debt service. The total allocation for GA airports was based on the aggregate published eligible development costs of each airport category in the 2019-2023 NPIAS Report. These allocated funds were then divided evenly across all airports in each category.[15]

More than $7.4 billion of the CARES Act funding allocated to airports can be used by airport sponsors for any lawful purpose pursuant to the FAA's Revenue Use Policy (64 Federal Register 7696). Many airports are using CARES Act funding to cover operating expenses, including staff payroll, in response to lost revenues while others are utilizing the funding to complete improvement projects. However, additional rules apply to the use of CARES Act funding. Funds from the CARES Act cannot be invested for future use or used to pay for projects that were initiated before the Act was passed, as the Act's purpose is to provide immediate economic relief to airports affected by the pandemic rather than to pay for airport improvement projects that would normally need a separate funding allocation. Additionally, any airport sponsor that accepts CARES Act funding must maintain employment for at least 90 percent of the individuals employed on March 27 through December 31, 2020. CARES Act funding is unique, however, as it does not carry the airport sponsor grant assurances that accompany standard grants, with the exception of assurances that prohibit discrimination against any specific aeronautical activity or individual based on their race, color, or national origin.[16]

0.3.2.4. Capital Improvement Projects

The pandemic has also had an immense impact on capital improvement projects at airports around the country. The Airport Consultants Council (ACC) conducted a survey of member companies in early April 2020 and found that more than 90 percent of companies had experienced delays or cancellations of projects, while 21 percent of companies had experienced severe delays.[17] The survey also identified trends in how projects were being affected. Most projects that were underway before the pandemic began are continuing, while projects that have completed the design phase but have not begun construction have been delayed and projects that have yet to be designed have been put on indefinite

[14] Federal Aviation Administration (FAA). (May 2020). "2020 CARES Act Grants". Available online at www.faa.gov/airports/cares_act/. (Accessed June 2020)
[15] FAA. (April 2020). "CARES Act Airport Grants – Frequently Asked Questions". (Accessed June 2020).
[16] FAA. (April 2020). "CARES Act Airport Grants – Frequently Asked Questions". (Accessed June 2020).
[17] Airport Consultants Council (ACC). (April 2020). "ACC Survey Identifies Initial Impacts from COVID-19 on Airport Development Projects". Available online at: https://www.aviationpros.com/airports/press-release/21133775/airport-consultants-council-acc-acc-survey-identifies-initial-impacts-from-covid19-on-airport-development-projects. (Accessed June 2020).

hold or canceled outright. However, some on-going projects have also experienced delays as engineering and construction staff at airports and consulting firms were forced to work remotely depending on state and local orders regarding essential worker definitions. Additionally, supply chain disruption has delayed projects as work crews wait for materials and equipment.[18]

Funding interruptions have also had a profound impact on capital improvement projects around the country. Although the CARES Act provided relief on federally funded projects, many local and state funding agencies have had to suspend grant appropriations. Several state aviation agencies, including Colorado, have reported a decline in aviation activity and are projecting a decline in state aviation revenues or funds.[19] As such, many state and locally funded improvement projects around the country have also been put on hold pending securing funding.

The decline in air traffic has proved beneficial for some airports. While commercial passenger airliners are parked on runways rather than arriving and departing from them, some airport sponsors are conducting pavement maintenance projects and accelerating other airport improvement projects. Additionally, the infusion of 100 percent AIP funds from the CARES Act has allowed airports to advance projects in their capital improvement program (CIP) since AIP grants for Fiscal Year 2020 did not require local funds.

0.3.3. Aviation Businesses

In addition to airports and airlines, many aviation businesses have been impacted by the COVID-19 pandemic. The most common businesses on airports, excluding airline companies, often are FBOs, flight schools, and Maintenance, Repair and Overhaul shops, although there are many other businesses depending on the airport. Similar to airports, aviation businesses generate revenue in a variety of ways, and, as a result, have been impacted differently by the pandemic. Additionally, certain businesses have been restricted by state and local stay-at-home orders, causing further financial and operational disruptions.

0.3.3.1. Fixed-Base Operators (FBOs)

FBOs handle many transient aircraft and passengers and often serve GA users including businesses and leisure users. As such, FBOs are highly dependent on high levels of activity to generate revenues to pay expenses, including staff. However, given that FBOs are the first point of contact at many airports, they are at a higher risk for virus transmission between air travelers and airport workers. The pandemic has had an immense impact on FBOs, as the number of GA flights around the world decreased by approximately 67 percent in April 2020 compared to the year prior.[20] Furthermore, FBOs often sell JetA and AvGas fuel to both transient and local traffic and have been affected by the decrease in fuel sales that has occurred around the globe. Additionally, some aircraft have been parked long-term on FBO ramps because of international travel restrictions, taking up space and draining resources. As a result,

[18] Ibid.
[19] National Business Aviation Association (NBAA). (April 2020). "State Aviation Officials See Wide-Ranging Impact of COVID-19". Available online at https://nbaa.org/aircraft-operations/safety/coronavirus/covid-19-point-of-impact/state-aviation-officials-see-wide-ranging-impact-of-covid-19/. (Accessed June 2020).
[20] ARGUS. (June 2020). "COVID-19'S Impact on Business Aviation". Available online at: https://www.argus.aero/covid-19-impact-business-aviation-activity/ (Accessed June 2020).

many FBO managers around the country have had to reduce staffing, cut operating hours, or limit services provided to customers in response to the loss of activity.[21] In response, many FBO operators, including national chains such as Signature Flight Support and Atlantic Aviation, have implemented new facility cleaning and aircraft handling procedures and have introduced rules and face covering requirements for travelers using their facilities.

0.3.3.2. Flight Schools

Flight schools and aviation training programs are the backbone of workforce development and are needed for active pilots to remain in compliance with FAA regulations, while also training the next generation of pilots and aviation professionals. Most flight schools have been deemed essential by state and local entities, however, two states, Virginia and Colorado, implemented stay-at-home orders that restricted flight training. These restrictions initially limited flight schools from conducting elective flight training of any form except to maintain currency; these restrictions have since expired.[22] Many flight schools and aviation education programs have opted to shut down amid concerns of virus transmissions. The flight schools that have remained open during the pandemic have drastically changed their operating procedures to limit potential exposure between students, instructors, and ground handlers. As it is nearly impossible to maintain social distancing in most flight training aircraft, some flight schools have halted dual flight instruction while others started conducting pre- and post-flight briefings over the phone, required face masks or have closed FBOs or flight training offices. Furthermore, flight schools have focused on cleaning aircraft interiors and inspection points between every user to minimize transmission risk.[23]

To alleviate the strain on pilots and flight training programs, the FAA has granted regulatory relief for pilots and flight schools who are unable to comply with standard requirements for FAA certificate holders including commercial and recreational pilots or drone operators. This relief order applies to all pilots fulfilling recency-of-experience or duration requirements as well as training for specialized certificate holders such as air ambulance operators. Additionally, the FAA has extended the validity of medical certificates in an effort to reduce the strain on medical professionals and examiners.[24] The actions of both flight schools and the FAA are significant in the aviation industry's efforts to minimize long term disruptions that could cause workforce shortage once the industry recovers.

0.3.3.3. Aircraft Maintenance Repair and Overhaul (MRO) Companies

MRO companies are vital to the overall safe operation of aircraft, whether GA or commercial. As aviation maintenance requirements are primarily dictated by FAA regulations, MROs are less dependent on aircraft traffic volumes at airports. As such, MROs have experienced less significant impacts compared to other aviation businesses. The National Business Aviation Association (NBAA) reported that

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[21] NBAA. (April 2020). "FBOs 'Feel the Pinch' of COVID-19". Available online at: https://nbaa.org/aircraft-operations/safety/coronavirus/covid-19-point-of-impact/fbos-feel-the-pinch-of-covid-19-crisis/ (Accessed June 2020).
[22] Aircraft Owners and Pilots Association (AOPA). (June 2020). "COVID-19 State by State". Available online at: https://pic.aopa.org/blogs/70. (Accessed June 2020)
[23] Tallman, J. (May 2020). "What's Happening on the Front Lines of Flight Instruction" Available online at: https://www.aopa.org/training-and-safety/flight-schools/flight-school-business/newsletter/2020/may/11/flight-schools-and-covid-19. (Accessed June 2020).
[24] FAA. (May 2020). "Novel Coronavirus (COVID-19) Updates". Available online at: https://www.faa.gov/news/updates/?newsId=94991. (Accessed June 2020).

many MROs have seen a decline in discretionary maintenance such as paint and interior work, but other maintenance and repair work has continued as normal. However, there have been some disruptions in the supply chain of aircraft parts which has led to some adverse impacts for MRO operators, but it is not a widespread problem.[25] Often times, required aircraft maintenance and inspections are based on calendar and flight requirements, such as annual inspections and 100-hour inspections. Given this, MROs are continuing to maintain aircraft and are poised to serve aircraft users as the recovery from the pandemic begins.

0.3.3.4. Rental Car Companies

Although they are not normally considered aviation businesses, rental car companies are often located at airports and rely heavily on air passengers and airport activity. As such, rental car operations have experienced profound negative impacts that were already down due to transportation network carriers (TNCs) such as Uber and Lyft. Hertz, the rental car company that is also in the same umbrella as Dollar, Thrifty, and Firefly brands filed for bankruptcy on May 22 with the purpose of restructuring debts and remaining in business.[26] Avis Budget has cut its vehicle purchasing plans by more than 80 percent in 2020 as a response to the downturn. Both companies have already slashed their fleets, selling more than 76,000 cars in the U.S. in March alone. The financial struggles of rental car operators have already created a ripple effect in both directions, as airports have lost revenues from rental car fees and the used-car market has been flooded with inventory, driving down prices for auto manufacturers.[27] Many airports had also built consolidated rental car facilities in recent years which is also hurting airports' financial conditions.

0.4. Impact of Pandemic to Colorado Airports

Like many of their counterparts around the globe, a large proportion of Colorado's 74 public-use airports have been impacted in some way by the COVID-19 pandemic. Given this, CDOT felt that it was important to document these impacts to provide context to the 2020 CASP and CEIS as both studies were completed using 2018 data. Nineteen airports were selected to participate in a series of phone interviews to identify the qualitative and quantitative effects of the pandemic. The group of airports included all 14 commercial serve airports in the state as well as five GA airports that were selected based on a combination of factors including their level of activity and geographic location. The location of each surveyed airport is shown in **Figure 0.2.**

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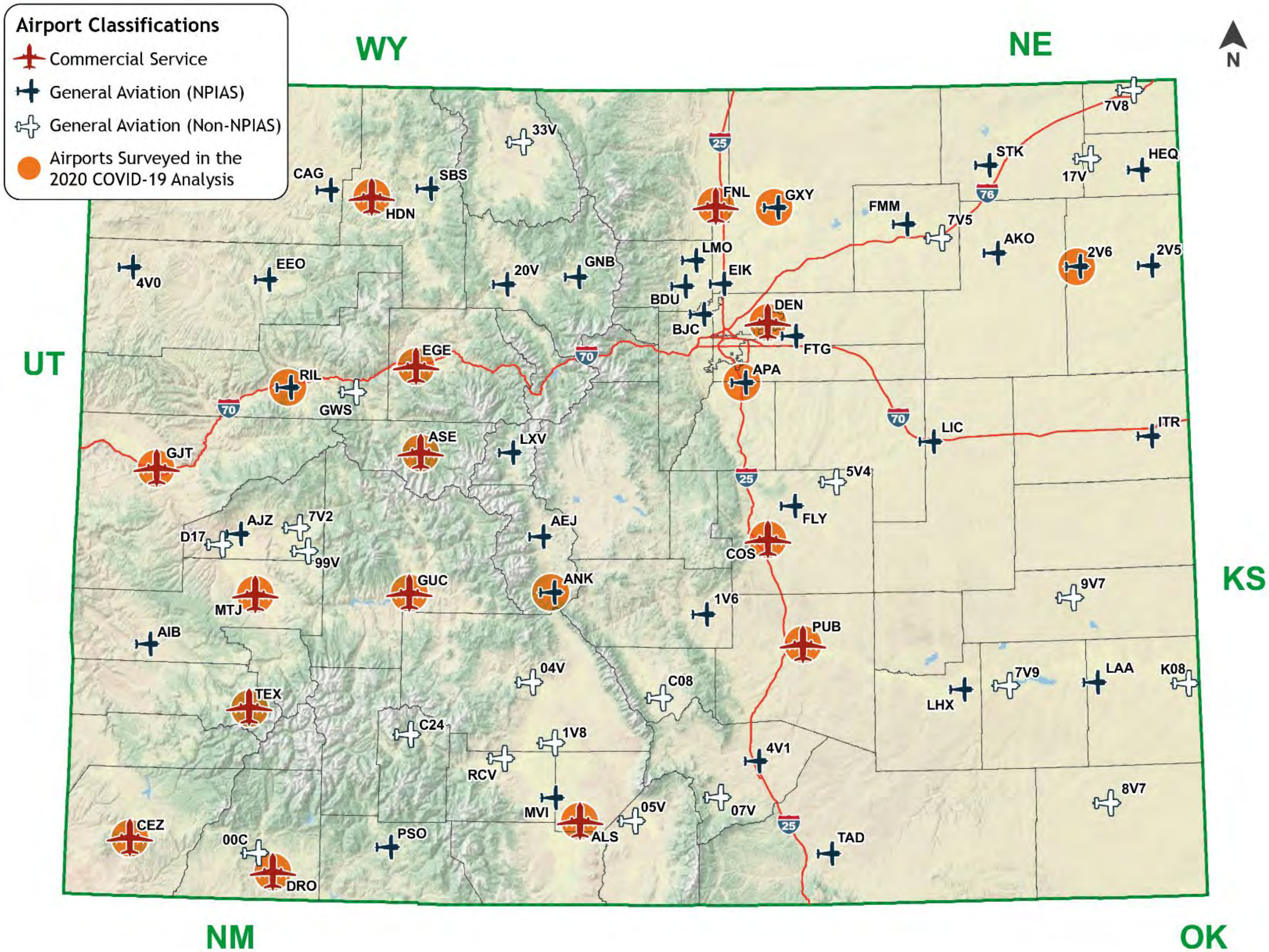
[25] NBAA. (April 2020). "MROs Work to Keep Aircraft Ready for Service During Pandemic". Available online at: https://nbaa.org/aircraft-operations/safety/coronavirus/covid-19-point-of-impact/mros-work-to-keep-aircraft-ready-for-service-during-pandemic/. (Accessed June 2020).
[26] Isidore, C. (May 2020). "Hertz Files for Bankruptcy". Available online at: https://www.cnn.com/2020/05/22/business/hertz-bankruptcy/index.html. (Accessed June 2020).
[27] [27] Isidore, C. (May 2020). "The rental car industry has ground to a near halt. This is what that means for automakers and car buyers". Available online at: https://www.cnn.com/2020/05/23/business/hertz-avis-budget-enterprise-covid-19-crisis/index.html

Figure 0.2. Airports Surveyed as part of the 2020 COVID-19 Postscript Analysis



Source: Kimley-Horn, 2020

0.4.1. Data Collection Process

In order to gather data from the 19 selected airports, a questionnaire was developed to identify the effects of the pandemic. The questionnaire was then used to guide phone interviews between the project team and airport managers and staff members, as well as CDOT Division of Aeronautics representatives. These calls were completed from late May to early June 2020, which provided enough time for airports to gather at least a full month's worth of data after the pandemic began. Each airport manager was asked to give a rating of the overall impacts of the pandemic, while certain topics were broken out to more closely analyze specific impacts. These topics included impacts to airport revenues, operational activity, funding, capital improvement projects, and staffing. Additionally, the questionnaire discussed impacts to business tenants on each airport, specifically regarding the need for lease abatements as well as changes to tenants' capital improvement programs and operational staffing. The final portion of the questionnaire asked airport managers to provide any available information regarding potential recovery scenarios, which is discussed in **Section 0.5**

0.4.2. Colorado COVID-19 Pandemic Timeline and Response

It is important to consider how the State of Colorado has been affected and has attempted to control the spread of the pandemic as it provides regional-specific context to the analysis. The first case of COVID-19 in Colorado was reported on March 5 by Governor Jared Polis. Less than a week later, the University of Colorado, University of Denver, and Colorado State University announced that all classes would be transitioned to online and their campuses would be closing. On March 14, Governor Polis announced the requirement for closure of downhill ski resorts, and two days later, on March 16, the required closure of all bars and restaurants in the state. March 18 and 19 saw the closure of all public schools and the federal government granting the state a disaster declaration, releasing relief funds to businesses across the state. Finally, on March 25, Governor Polis announced a state-wide stay-at-home order after confirmed cases exceeded 1,000.[28]

Colorado's stay-at-home order asked most of the state's 5.8 million residents to remain at home when not completing essential tasks such as grocery shopping, picking up medications, doing laundry, or participating in outdoor recreational activities such as walking or hiking. All businesses and government functions that were deemed 'nonessential' by the order were ordered to close on March 26 to prevent the spread of the virus. For those businesses that remained open, social distancing was required and in-person capacity was limited.[29] Essential businesses included grocery stores, health care providers, financial institutions, childcare facilities, liquor stores, firearm distributors, and homeless shelters. Additionally, all airports in the state were deemed essential, and some non-essential businesses on airports, including restaurants, were granted exceptions. However, certain limitations were imposed on flight training activities, as flight schools could only provide instruction for military purposes and pilot

[28] Denton, R. and Fries, T. (June 2020). "Coronavirus timeline: An in-depth look at COVID-19 in Colorado". Available online at: https://www.denverpost.com/2020/04/08/colorado-coronavirus-covid-timeline/. (Accessed June 2020).
[29] Tabachnik, S. and Burness, A. (May 2020). "Gov. Jared Polis orders Colorado to stay home in bid to slow coronavirus outbreak" Available online at: https://www.denverpost.com/2020/03/25/colorado-stay-at-home-coronavirus-polis/. (Accessed June 2020).

proficiency requirements. As such, elective flight training was not permitted, and as a result, many flight schools around the state shut down for the duration of the order.[30]

The stay-at-home order was originally set to expire on April 11, however, on April 6, amid rising cases, Governor Polis extended the mandate until April 26. On April 27, the state transitioned to a 'Safer at Home' mandate, which provided guidelines for a phased reopening. Beginning with the reopening of retail stores, the phased reopening has extended to salons, tattoo shops, personal trainers, and eventually limited dine-in at restaurants and bars. However, five counties in the Denver metro area extended local stay-at-home orders until May 8.[31] The 'Safer at Home' guidance has continued through June, although as of June 16, Governor Polis announced the 'Protect Your Neighbor' guidance that allowed some counties to reopen larger facilities and host events of up to 500 people if they met certain benchmarks related to transmission rates and testing capabilities.[32] However, after the number of daily new cases began to increase in late June and early July, Governor Polis announced a statewide requirement for masks to be worn at all times in public settings on July 16.[33]

0.4.3. Overall Airport Impacts

Each airport manager was asked to give an overall impact rating using a one to 10 scale, with one representing the least significant impacts and 10 representing the most. To provide a more comprehensive analysis, airports were asked to take all aspects of the pandemic's impacts into account when giving this rating, including impacts to airport revenues, activities, operations, and funding.

Colorado Springs Municipal (COS), Centennial (APA), and Montrose Regional (MTJ) reported the highest rating of nine, while Yuma Municipal (2V6) reported the least impacts with an overall rating of one. The overall impact ratings mostly reflected the overall levels of activity at each airport, as many of the larger GA and commercial service airports in the state reported higher overall ratings (airport activity is discussed further in **CASP Chapter 2. *Inventory of System Condition***). Additionally, on average, commercial service airports reported having more significant impacts than GA airports. However, there are a few exceptions. Most notably, Denver International Airport (DEN), which is highly dependent on revenues from passenger and cargo airlines, reported an overall impact of five, which was lower than three GA airports and all but one of the commercial service airports surveyed. DEN cited a well-built contingency plan, a large cash reserve, and a high level of coordination with airlines as the reasons for the lower overall impact rating. Additionally, multiple airports including Cortez Municipal (CEZ) and Rifle Garfield County (RIL) reported that funding provided by the CARES Act reduced the overall impacts of the crisis and therefore lowered each airport's rating.

The rating of the overall impact of the pandemic on each survey airport is reflected in **Table 0.1.**

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[30] Aircraft Owners and Pilots Association (AOPA). (June 2020). "COVID-19 State by State-Colorado". Available online at: https://pic.aopa.org/blogs/70/36. (Accessed June 2020)
[31] Tabachik, S. and Swanson, C. (April 2020). "From caution to defiance, Colorado counties differ on whether to accept shift to "safer at home"". Available online at: https://www.denverpost.com/2020/04/25/coronavirus-covid-stay-at-home-orders/. (Accessed June 2020).
[32] Denton, R. and Fries, T. (June 2020). "Coronavirus timeline: An in-depth look at COVID-19 in Colorado". Available online at: https://www.denverpost.com/2020/04/08/colorado-coronavirus-covid-timeline/. (Accessed June 2020).
[33] Colorado Department of Public Health & Environment. (July 2020). "Guidance for Wearing Masks". Avaialable online at: https://covid19.colorado.gov/mask-guidance. (accessed July 2020).

Table 0.1. Overall Impacts

Associated City	Airport Name	FAA ID	Overall Impact Rating (1-10 Scale)
Alamosa	San Luis Valley Regional	ALS	8
Aspen	Aspen-Pitkin County	ASE	8
Colorado Springs	Colorado Springs Municipal	COS	9
Cortez	Cortez Municipal	CEZ	6
Denver	Centennial	APA	9
Denver	Denver International	DEN	5
Durango	Durango-La Plata County	DRO	7
Eagle	Eagle County Regional	EGE	6
Fort Collins/Loveland	Northern Colorado Regional	FNL	7
Grand Junction	Grand Junction Regional	GJT	8
Greeley	Greeley-Weld County	GXY	4
Gunnison	Gunnison-Crested Butte Regional	GUC	7
Hayden	Yampa Valley	HDN	8
Montrose	Montrose Regional	MTJ	9
Pueblo	Pueblo Memorial	PUB	7
Rifle	Rifle Garfield County	RIL	5
Salida	Harriet Alexander Field	ANK	7
Telluride	Telluride Regional	TEX	4
Yuma	Yuma Municipal	2V6	1

Source: 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

0.4.4. Impacts to Airport Operations and Activities

Airports throughout the state have experienced operational changes during the pandemic, with some changes having a more significant effect than others. The 14 commercial service airports all reported some change in commercial airline operations or passenger traffic during the pandemic, with varying degrees of severity. Additionally, commercial service and GA airports alike have reported changes in both local and itinerant GA traffic, further affecting the airports' revenues, funding, and staffing capabilities.

Nearly every commercial service airport in the state experienced a decrease in commercial service flights operating each day during the pandemic. However, the magnitude of the reductions varied from airport to airport. For example, Pueblo Memorial (PUB), San Luis Valley Regional (ALS), and Cortez Municipal (CEZ) receive commercial service flights through the Essential Air Service (EAS) program, meaning that airline routes remained consistent with pre-pandemic schedules, although load factors and types of aircraft serving those routes changed. Conversely, Telluride Regional (TEX) reported that commercial service ceased altogether. Furthermore, several mountain airports reported that seasonal airline flights ended early, and summer schedules were reduced, leading to a decline at some airports of up to 95 percent in commercial activities.

For the commercial flights that continued, passenger load factors dropped to nearly zero and many aircraft were operated with little to no passengers on board. Six airports reported decreases in passenger enplanements of at least 25 percent, with Eagle County Regional (EGE) reporting a 98 percent decline from enplanement levels from the previous April, the largest decline of any airport.

Denver International (DEN), the busiest airport in the state, reported a reduction primarily in international service while domestic service experienced a less significant decrease. DEN usually receives several flights from international destinations, but during the period from April 1 to June 16, no international flights were operated. DEN cited a federal ban on international air travel from any commercial service airport excluding 15 airports classified as a special port of entry based on CDC staffing levels in each airport's respective community. The international travel ban began in March and was expected to last 30 days but has been repeatedly extended by the U.S. State Department and remains in place for travelers from Europe as of June 30. DEN reported that they have received interest from multiple European airlines that will resume scheduled international flights once the ban is lifted. DEN's first international service resumed July 16 with a Volaris flight to Mexico.

GA activities have also been harshly impacted by the pandemic, disrupting airports' revenue streams and staffing needs. Fuel sales at GA airports dropped as much as 90 percent during March, April, and May as itinerant activities and flight training effectively ceased. Pueblo Memorial (PUB) cited the decline in flight training as a principal reason for their decline in revenue as L3 Harris Doss Aviation, a military contract flight school, is the largest tenant at the airport. However, the airport noted that the decline in flight training correlated with a slight increase in transient business activity.

Additionally, airports around the state that have a large amount of business and corporate activities reported a significant drop-off in activities as many industries transitioned to a virtual work environment. Specifically, Aspen-Pitkin County (ASE), Centennial Airport (APA), and Rifle Garfield County (RIL) all cited the decline in business or chartered jet and turboprop traffic as a reason for the overall operational decline at their airports. April was most commonly reported as being the slowest month for business and corporate traffic before activity increased in May, raising operational counts for airports that serve large amounts of corporate traffic. Corporate traffic increased so much that on May 5, APA was reported to have been the busiest airport in the U.S. with more than 1,300 daily operations.

Table 0.2 presents the estimated average decline in fuel sales (flowage) between April and May 2020 at the 19 airports. The percentages represent a composite percentage of JetA and AvGas sales decreases as some airports did not provide individual percentages for each fuel type. Some airports did not provide specific data related to fuel flowage, rather, they used metrics such as passenger enplanements and aircraft operations to describe the changes in activities. The data that was not obtained from airports is noted as "N/P" for "not provided" in this analysis. Additionally, as Yuma Municipal (2V6) does not sell fuel to public users, this question was not relevant. These data are denoted as "N/A" for "not applicable".

Table 0.2. Impacts to Airport Fuel Sales

Associated City	Airport Name	FAA ID	Airport Reported Fuel Sales Decrease (April-May)
Alamosa	San Luis Valley Regional	ALS	45%
Aspen	Aspen-Pitkin County	ASE	45%
Colorado Springs	Colorado Springs Municipal	COS	N/P
Cortez	Cortez Municipal	CEZ	94%
Denver	Centennial	APA	90%
Denver	Denver International	DEN	N/P
Durango	Durango-La Plata County	DRO	48%
Eagle	Eagle County Regional	EGE	88%
Fort Collins/Loveland	Northern Colorado Regional	FNL	75%
Grand Junction	Grand Junction Regional	GJT	64%
Greeley	Greeley-Weld County	GXY	2%
Gunnison	Gunnison-Crested Butte Regional	GUC	34%
Hayden	Yampa Valley	HDN	28%
Montrose	Montrose Regional	MTJ	90%
Pueblo	Pueblo Memorial	PUB	N/P
Rifle	Rifle Garfield County	RIL	74%
Salida	Harriet Alexander Field	ANK	88%
Telluride	Telluride Regional	TEX	88%
Yuma	Yuma Municipal	2V6	N/A

Source: 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

0.4.5. Impacts to Airport Revenues

Colorado's airports rely on similar revenue streams as other airports around the U.S., and, as such, many have experienced changes in overall revenues. At the time that the data were collected, most airports had two months' worth of data from fuel sales, land leases, and other revenue streams to provide an account of the pandemic's impacts. Airports were also asked to identify when the decline in revenues began and when they were at their worst.

Eighteen of the surveyed airports reported experiencing a loss in revenues, while one, Yuma Municipal (2V6), reported no loss. Airports were asked to provide an estimation for the change in total revenues in 2020 compared to 2018. However, certain airports were unable to provide an estimate for the entire calendar year and therefore supplemented the information with data regarding monthly losses during the height of the pandemic or projections for monthly activity levels for the remainder of the year. These data were then compiled to create composite estimates for 2020 revenue losses. It is important to note that these projections do not reflect actual airport budgets and could change significantly. Furthermore, several airports noted that operating revenues had grown each year since 2018, so the revenue losses from 2018 reflect a smaller percentage decrease compared to actual losses from 2019 results.

Montrose Regional (MTJ) reported the largest projected revenue reduction of any commercial service airport, as it predicted a 40-60 percent loss from 2018 revenues. The airport noted that concessionaire sales and landing fees were affected the most when passenger traffic declined. Eagle County Regional (EGE) only expected a 13-16 percent loss, the least of any commercial service airport. However, Gunnison-Crested Butte Regional (GUC) and Pueblo Memorial (PUB) did not provide projected losses because each facility lacked fuel sales and concessionaire data needed to provide analysis when the questionnaire was completed. Of the five surveyed GA airports, Centennial (APA) reported the largest projected impact with an estimated revenue loss of 11 percent. Three other GA airports reported a loss in revenues, and, of those, Harriet Alexander Field (ANK) and Greeley-Weld County (GXY) both reported an eight percent decline in projected revenues, the lowest loss reported.

Yuma Municipal (2V6) was unique in this portion of the survey as it reported no change in revenues and cited the absence of fuel sales at the airport as the reason for the lack of impacts. 2V6 also noted that aerial agricultural application is the most common activity at the airport and such activities have been largely unaffected. 2V6 stated that the only operational changes at the airport were a slight increase in medical supply and evacuation flights, as well as a new requirement for maintenance staff members to wear face masks while on the airfield.

Some airports identified specific dates when revenues and activities began to decline, often because of the loss of scheduled passenger service, while others identified a broader timeframe as activities slowly trailed off. Several mountain airports noted that the timing of the decline was fortuitous as late spring is often considered the offseason as ski resorts around the state close for the season. Airports also were asked to describe when the impacts of the pandemic were most severe, i.e., the low point in revenues and activities. Twelve airports reported the worst impacts in April, while the earliest bottoming-out was reported as the third week of March and the latest was reported as the first week of May.

Airports reported the low point based on a variety of metrics. For example, APA reported that fuel sales dropped as much as 90 percent during April compared to the year prior, while Grand Junction Regional (GJT) reported the low point in April when passenger levels declined 95 percent from the previous April's activities. However, not all airports identified a specific time frame when revenues and activities bottomed out, as Rifle Garfield County (RIL) reported their activity levels remained fairly constant after the initial decline.

Table 0.3 summarizes each surveyed airport's responses to questions related to estimated revenue losses, when the decline in revenue and operations began, and when revenues and activities reached their lowest point.

Table 0.3. Impacts to Airport Revenues

Associated City	Airport Name	FAA ID	Loss of Revenues (Y/N?)	Estimated Revenue Loss (2020 Vs. 2018)	When Did the Decline Start?	When Was the Decline in Revenues the Worst?
Alamosa	San Luis Valley Regional	ALS	Yes	45%	March 29	April
Aspen	Aspen-Pitkin County	ASE	Yes	42%	March 9	March 20
Colorado Springs	Colorado Springs Municipal	COS	Yes	43%	Mid-March	Mid-April
Cortez	Cortez Municipal	CEZ	Yes	40%	Mid-March	N/P
Denver	Centennial	APA	Yes	11%	Last 2 weeks of March	April
Denver	Denver International	DEN	Yes	25-30%	3rd week of March	April
Durango	Durango-La Plata County	DRO	Yes	39%	March 13	N/P
Eagle	Eagle County Regional	EGE	Yes	13-15%	March 22	April
Fort Collins/Loveland	Northern Colorado Regional	FNL	Yes	20%	Late March	Mid-April
Grand Junction	Grand Junction Regional	GJT	Yes	34%	March 10	April
Greeley	Greeley-Weld County	GXY	Yes	8%	End of March	April
Gunnison	Gunnison-Crested Butte Regional	GUC	Yes	N/P	March 11	April
Hayden	Yampa Valley	HDN	Yes	12%	March 15	Third week of March
Montrose	Montrose Regional	MTJ	Yes	40-60%	Mid -March	First week of May
Pueblo	Pueblo Memorial	PUB	Yes	N/P	Mid-March	April
Rifle	Rifle Garfield County	RIL	Yes	10%	March 13	Since March
Salida	Harriet Alexander Field	ANK	Yes	8%	Mid-March	April
Telluride	Telluride Regional	TEX	Yes	25%	March 15	April
Yuma	Yuma Municipal	2V6	No	0%	N/A	N/A

Source: 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

0.4.6. Impacts to Airport Funding and Staffing

The disruptions in activities and revenue streams at many Colorado airports created a chain reaction of effects in terms of airport funding and staffing. For this reason, airport managers were asked to discuss details regarding the use of their CARES Act funding, the effect of reduced CDOT fuel tax disbursements on the airport budget and planned capital improvement projects. Additionally, airports were asked to report any staffing changes in airport administrative, operational, or maintenance personnel.

The 49 NPIAS airports in Colorado's airport system received funding from the CARES Act, including all 19 airports surveyed in this analysis. Of the surveyed airports, Denver International (DEN) received the largest amount of funds ($269,073,999), while Yuma Municipal (2V6) received the smallest amount ($20,000). However, San Luis Valley Regional (ALS) received the smallest amount of any commercial service airport ($30,000). For this analysis, each airport was asked to identify how they planned to utilize the funding. Thirteen of the surveyed airports reported that the funding would be used to cover operating expenses, while two airports were planning on using the funds to cover debt service, and one planned on using the funds strictly for capital improvements. Three airports reported that the funds would be divided and partially used for capital projects and operating expenses. The impact of the funding also varied drastically between airports, as Centennial (APA) reported that the $157,000 of CARES Act funding received would cover one week's worth of operating expenses, while Grand Junction Regional (GJT) reported that the funding ($5,679,740) would cover debt service for three years.

In addition to federal funding, the analysis sought to determine the effects that a decline in state funding would have on airport's operating and capital improvement budgets. Since mid-March, CDOT has projected that revenues and fuel tax disbursements would decrease because of a reduction in fuel sales an overall decrease in flight activities. Therefore, airports were asked to discuss how the decline in CDOT fuel tax disbursements would affect the airport's overall budget. Unfortunately, at the time the data collection process was completed, most airports did not have fuel tax disbursement data from CDOT for the months of March or April, so a projection of total revenue losses could not be completed. However, airports did provide information about how much of their total budget is based on CDOT fuel tax disbursements, which provides needed context for the projection of possible revenue losses for the year. Centennial (APA) reported the largest dependency on the disbursements as they represent 16.7 percent of their annual budget, while 11 airports reported that the budgets accounted for less than five percent of their annual budget. As such, the impacts stemming from a loss in CDOT fuel tax disbursements are generally low, although all airports that receive disbursements indicated it is a revenue stream they greatly appreciate.

As a result of changes to several factors including airport funding, contractor capability, and material availability, airport capital improvement projects have been significantly impacted by the pandemic in both positive and negative ways. Thirteen surveyed airports reported that they had put capital projects on either a delay or indefinite hold. Of these, eight airports cited a lack of local funding as the reason for the delay, while one airport cited the inability to incur debt as the cause, and one cited the lack of available CDOT funding. The remaining three airports did not cite a specific reason for the delay. Of the six airports that reported having no delayed or suspended projects, several reported that they were worried about future projects being delayed given the projected loss in state funding and local resources.

Some airports took advantage of the pandemic's impacts to complete improvement projects around the terminal or on the airfield ahead of schedule. Five surveyed airports reported that they had or are planning on moving improvement projects up because of the decline in activities. Airports cited the lack of passenger activities and the infusion of CARES Act funding as the reason for projects being completed early. Most notably, Denver International (DEN) reported that it had planned to complete a series of terminal revitalization projects over the course of 10 years to avoid passenger disruption, however, because of this time of depressed demand, the projects will now be complete in two to three years.

Airports were also asked to provide information regarding any staffing changes in each airport's administrative and maintenance staff. Fortunately, no airport has made permanent staffing changes, although Yampa Valley Regional (HDN) reported that seasonal staff members were released two weeks early after commercial service flights halted. However, two airports noted that their local municipality had imposed hiring freezes, which could cause temporary staffing shortages for the affected airports. Additionally, many airports asked staff to work from home to mitigate the spread of the virus while some offered paid leave to staff members unable to work from home.

Table 0.4 presents the responses of each airport's response to questions regarding airport funding and capital projects.

Table 0.4. Impacts to Airport Capital Funding and Project Progress

Associated City	Airport Name	FAA ID	How is the Airport Utilizing CARES Act Funding?	Has the Airport Put Any Projects on Delay or Indefinite Hold?	Has the Airport Expedited or Moved Any Projects Forward?
Alamosa	San Luis Valley Regional	ALS	Operating Expenses	Yes	No
Aspen	Aspen-Pitkin County	ASE	Operating Expenses	Yes	No
Colorado Springs	Colorado Springs Municipal	COS	Operating Expenses	Yes	Yes
Cortez	Cortez Municipal	CEZ	Operating Expenses	No	No
Denver	Centennial	APA	Operating Expenses	Yes	No
Denver	Denver International	DEN	Debt Service	Yes	Yes
Durango	Durango-La Plata County	DRO	Operating Expenses	Yes	No
Eagle	Eagle County Regional	EGE	Operating Expenses	Yes	No
Fort Collins/Loveland	Northern Colorado Regional	FNL	Capital Improvements	Yes	No

Associated City	Airport Name	FAA ID	How is the Airport Utilizing CARES Act Funding?	Has the Airport Put Any Projects on Delay or Indefinite Hold?	Has the Airport Expedited or Moved Any Projects Forward?
Grand Junction	Grand Junction Regional	GJT	Debt Service	Yes	Yes
Greeley	Greeley-Weld County	GXY	Operating Expenses	No	No
Gunnison	Gunnison-Crested Butte Regional	GUC	Operating Expenses/ Capital Improvements	Yes	Yes
Hayden	Yampa Valley	HDN	Operating Expenses/ Capital Improvements	No	Yes
Montrose	Montrose Regional	MTJ	Operating Expenses	Yes	No
Pueblo	Pueblo Memorial	PUB	Operating Expenses	No	No
Rifle	Rifle Garfield County	RIL	Operating Expenses	Yes	No
Salida	Harriet Alexander Field	ANK	Operating Expenses/ Capital Improvements	No	No
Telluride	Telluride Regional	TEX	Operating Expenses	No	No
Yuma	Yuma Municipal	2V6	Operating Expenses	No	No

Source: 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

0.4.7. Impacts to Tenant Funding and Staffing

Airport sponsors were not the only entities affected by the pandemic, as hundreds of airport business tenants around the state have been adversely affected by the decline in aviation activities. As discussed in **Section 0.3** aviation businesses of all sorts, including airlines, have experienced drastic impacts and have had to react accordingly in an effort to reduce costs and remain in business. Therefore, airport managers were asked to provide details about how the funding and staffing of business tenants were impacted. Additionally, airport managers were asked to discuss details regarding rent abatements or deferrals for on-airport businesses.

Unlike most airport improvement projects, tenant capital improvement projects must rely on internal funding to complete projects, and as such, many businesses have had to delay or suspend projects. Four airports reported that business tenants had to delay or cancel projects. Specifically, Montrose Regional (MTJ) reported that Rocky Mountain Turbines had put multiple projects on hold while Centennial (APA) reported that construction of a new large hangar development was deferred until 2021. Denver International (DEN) reported that rental car companies had delayed improvement projects and reported that the airport had suspended requirements for concessionaires to update leased terminal spaces. Rifle Garfield County (RIL) reported that the Atlantic Aviation FBO had scrapped a project for a new hangar at the airport due to lack of funding. Of the airports that reported no changes to tenant improvement projects, several noted that this was because no tenants had planned projects. It is possible that business tenants at these airports could delay the planning of future projects until the industry shows signs of recovery.

Many business tenants have seen significant impacts to operational activities and revenues, and, as such, have had to make changes to staffing levels. Twelve airports reported changes in tenant staffing levels, however, two airports indicated that tenants had actually added employees. Airline companies appear to be heavily impacted, as six airports reported that airlines furloughed or laid off staff, while one airport reported that seasonal airline workers were released two weeks early. Additionally, eight airports reported that rental car companies had made staffing changes. Several airport managers also mentioned that Hertz was the rental car company at their airport, and, given this, they were uncertain of what operational and staffing changes would occur following the company's bankruptcy declaration. Other businesses that reported significant staffing changes include FBOs, restaurants, and MRO shops. Additionally, multiple airports allowed concessionaires to temporarily close to reduce operating costs and remain in business.

Fourteen of the surveyed airports, including two GA airports, reported that they were providing rent abatements or deferrals. In the context of this analysis, it is important to note that an abatement means that tenants are permanently relieved of responsibility to pay a portion or entirety of rent payments, while a deferral refers to rent payments that have been suspended temporarily but are expected to be paid to the airport at a later date. Of these airports, seven reported that tenants that requested relief were provided rent deferral for three months (usually April-June), while three airport managers reported that they were offering six-month deferrals (April-September). These airports all reported different requirements for rent repayment, including Gunnison-Crested Butte Regional (GUC), which reported a 90-day repayment period, and San Luis Valley Regional (ALS), which allowed tenants up to 12 months to repay deferred rent. Four airports reported that they were providing rent abatement to business tenants. These airports noted that the businesses that were granted abatement showed a reduction in revenues or, in some cases, were forced to close because of state or local restrictions.

Table 0.5 presents each airport manager's response to questions regarding the staffing and funding of business tenants, as well as their response to whether or not the airport was providing rent abatement or deferrals.

Table 0.5. Impacts to Tenant Staffing and Funding

Associated City	Airport Name	FAA ID	Have Business Tenants Made Staffing Changes?	Have Business Tenants Put Any Projects on Delay or Indefinite Hold?	Has the Airport Offered Rent Abatement or Deferrals to Business Tenants?
Alamosa	San Luis Valley Regional	ALS	No	No	Yes
Aspen	Aspen-Pitkin County	ASE	Yes	No	Yes

Associated City	Airport Name	FAA ID	Have Business Tenants Made Staffing Changes?	Have Business Tenants Put Any Projects on Delay or Indefinite Hold?	Has the Airport Offered Rent Abatement or Deferrals to Business Tenants?
Colorado Springs	Colorado Springs Municipal	COS	No	No	Yes
Cortez	Cortez Municipal	CEZ	Yes	No	No
Denver	Centennial	APA	Yes	Yes	No
Denver	Denver International	DEN	Yes	Yes	Yes
Durango	Durango-La Plata County	DRO	Yes	No	Yes
Eagle	Eagle County Regional	EGE	No	No	No
Fort Collins/Loveland	Northern Colorado Regional	FNL	No	No	Yes
Grand Junction	Grand Junction Regional	GJT	Yes	No	Yes
Greeley	Greeley-Weld County	GXY	Yes	No	Yes
Gunnison	Gunnison-Crested Butte Regional	GUC	No	No	Yes
Hayden	Yampa Valley	HDN	Yes	No	Yes
Montrose	Montrose Regional	MTJ	Yes	Yes	Yes
Pueblo	Pueblo Memorial	PUB	Yes	No	Yes
Rifle	Rifle Garfield County	RIL	Yes	Yes	Yes
Salida	Harriet Alexander Field	ANK	No	No	No
Telluride	Telluride Regional	TEX	Yes	No	Yes
Yuma	Yuma Municipal	2V6	No	No	No

Source: 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

0.5. Potential Recovery Scenarios

It is clear that the COVID-19 pandemic has had severe impacts on not only Colorado's airports but the global aviation industry and overall economy. As such, thousands of government agencies, companies, and industry organizations have developed scenarios or models to predict how select industries or the global economy will recover from the economic downturn caused by the pandemic. This analysis provides a high-level overview and discussion of possible recovery scenarios and recovery timelines for the aviation industry and compares these results with the reported recovery plans of the 19 Colorado airports. Additionally, scenarios were developed to illustrate how changes to passenger traffic could possibly affect the overall economic activity level of the Colorado airport system compared to the findings of the 2020 CEIS. Finally, potential long-term changes are discussed as the aviation industry shifts its operating and planning procedures to meet the public's needs and desires.

0.5.1. Aviation Industry Recovery Scenarios

Aviation industry organizations have created scenarios using data and insight from airlines, airports, government agencies as well as information from previous economic downturns such as 9/11, SARS, and the 2008 Global Financial Crisis. However, the pandemic is far from over and the circumstances surrounding the pandemic remain highly volatile, meaning that there are countless ways that the situation could play out. As such, all recovery scenarios presented have taken significant assumptions and should be regarded accordingly.

Table 0.6 presents a series of potential recovery scenarios developed in April by Inter*VISTAS*, an international aviation consulting firm that provided data for Airlines for America's analysis of the pandemic. These scenarios consider several factors including global travel restrictions, global case counts, and regional differences in how public officials are attempting to control the spread of the outbreak.

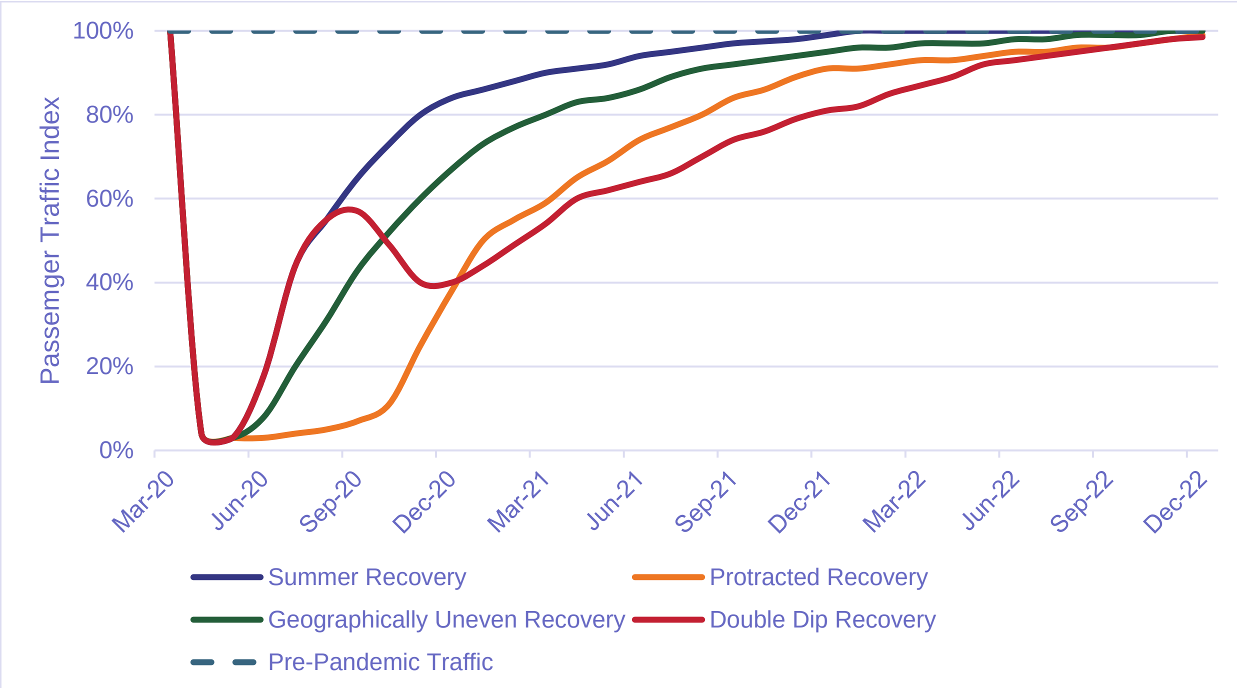
Table 0.6. Potential Recovery Scenarios

Recovery Scenario	Description	Recovery Timeline
Summer	Global travel restrictions start to be lifted in June and passenger traffic rapidly increases at the end of summer 2020	38 percent of passenger traffic lost in 2020, full recovery in mid to late 2021
Protracted	Global travel restrictions remain in place until September 2020 due to viral flare-ups, traffic increases more slowly than summer recovery	73 percent of passenger traffic lost in 2020, full recovery in late 2022 or 2023
Geographically Uneven	Some parts of the world control virus outbreak and lift travel restrictions while others do not, enabling domestic air travel in different regions. The global economy will recover more quickly than protracted recovery, with some regions lagging behind	59 percent of passenger traffic lost in 2020, full recovery in mid to late 2022
Double Dip	Global restrictions are lifted in the summer, but a second wave of the virus causes a decline but not a total lockdown	52 percent of passenger traffic lost in 2020, full recovery late 2022

Source: InterVISTAS, April 2020

Each scenario provides a different timeline of when the global aviation industry will recover from the recession caused by the pandemic. For the purpose of the analysis, full recovery indicates that passenger traffic levels have returned to the level reported before the pandemic began, although this level is still below previously forecasted levels of activity based on industry growth. **Figure 0.3** illustrates the timeline of each recovery scenario by measuring total passenger traffic as a percentage of pre-pandemic traffic levels.

Figure 0.3. Potential Recovery Timelines



Source: InterVISTAS, April 2020

These scenarios were developed in April 2020 and, given that the situation has evolved in the months following, the probability of certain scenarios has changed. For example, the initial scenario of a summer recovery seems less probable because as of June 20, 2020, global infection rates of the virus were still increasing.[34] It appears that the 'Protracted' or 'Geographically Uneven' recovery is the most probable scenario for the airline industry as very few travel restrictions have been lifted and passenger traffic has begun to increase. Furthermore, certain states or regions such as Australia and New Zealand appear to have slowed the spread of the virus, while other areas including Florida, Texas, and Arizona have recorded a record number of daily new cases during the first three weeks of June. As such, it is possible that regions with a low amount of cases will reopen to domestic travelers while remaining closed to international travelers that may have come from a region with high infection rates, following the 'Geographically Uneven' model. However, both the protracted and geographically uneven recovery scenarios are based on a single 'wave' of the virus spreading across the globe. If the pandemic experiences a 'second wave', a resurgence in areas already affected by the virus, as many epidemiologists have suggested, overall traffic may decline once more, and the industry recovery will follow the 'Double Dip' scenario. Given the volatility and the complexity of the situation surrounding the pandemic, it is highly probable that the actual recovery of the aviation industry will follow a path that includes elements of all four scenarios.

[34] Johns Hopkins University. (June 2020). "COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)." Available online at https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6. (Accessed June 2020)

ICAO has also developed a series of projections for the timeline and shape of the industry's recovery. These projections were developed in June and largely reflect the findings of Inter*VISTAS*, however, ICAO also provided monetary estimates for the total impacts of specific sectors of the aviation industry. ICAO calculated that the global airline industry generated approximately $2.7 trillion USD in economic impact in 2016 and was forecast to increase 110 percent by the year 2036. Using a conservative estimate similar to the 'Summer Recovery' scenario, the airline industry will experience an overall reduction of 2.29 million to 3.06 million passengers in 2020, resulting in an approximate loss of $302 to $400 billion USD in gross revenues. Additionally, ICAO estimates that airports will experience a loss of more than 50 percent of passengers, resulting in a loss of roughly $97 billion USD of airport revenues in 2020.[35]

To provide context for the impacts of the pandemic, it is crucial that they are compared to the impacts of other events such as 9/11 and the 2008 Global Financial Crisis. After the tragic events of the September 11 attacks, the aviation industry experienced a decline in demand and a downturn in the global economy, driving the industry into a recession that the industry did not recover from until the second quarter of 2004. In comparison, the 2008 Global Financial Crisis caused a decline in passenger demand and a significant increase in fuel prices, crippling the industry. It took the passenger airline industry more than six years to return to the 2008 passenger traffic levels, while the global air cargo industry took nearly 10 years to fully recover. Based on the scenarios presented above, it appears that the recovery from the pandemic will likely mirror the post-9/11 recovery process. However, the situation remains volatile and the recovery could play out differently than any scenario currently constructed.

0.5.1.1. *Colorado Airport Recovery Scenarios*

Colorado airports were also asked to provide an explanation of each airport sponsor's plan to weather the pandemic and to recover to normal operating and revenue levels. The scope and timeline of the recovery reported by each airport largely depended on the overall effects of the pandemic on the airport. For example, Centennial (APA) reported an overall impact rating of nine out of 10 and is planning on cutting operating expenses by 12.5 percent in 2020 and estimates that the recovery will take until 2023. 2V6 reported very minor impacts from the pandemic and has not implemented any structured recovery plan.

Many of the airport managers reported that their recovery projection was based largely on the projections of the aviation industry and the overall economy. In the meantime, most of the airports have been working on reducing operating expenses, canceling or delaying capital improvements, and operating with minimum staffing. Five airports projected that the recovery period would last two to four years, reflecting the predictions made by ICAO and Inter*VISTAS*. However, not all airport managers gave specific timelines for recovery, rather they provided details of the operational changes that may be made during the recovery. These changes include Colorado Springs Municipal (COS) increasing advertising to stimulate demand, San Luis Valley Regional (ALS) working with tenants to gather passenger enplanement data for future FAA funding, and Greeley-Weld County (GXY) potentially leasing

[35] ICAO. (June 2020). "Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis". Available online at: https://www.icao.int/sustainability/Documents/COVID-19/ICAO%20COVID%202020%2006%2008%20Economic%20Impact.pdf (Accessed June 2020)

out landside land plots as storage yards as an extra revenue stream. Three airports, Cortez Municipal (CEZ), Harriet Alexander Field (ANK), and Yuma Municipal (2V6) reported that they planned to continue operating as normal, however, CEZ noted that it would be utilizing CARES Act funding to operate until recovery is complete.

Several mountain airports reported that they based their recovery projections on the activities of the mountain sports resorts that each airport serves. Each airport had a unique outlook, as some airports including Aspen-Pitkin County (ASE) had conservative projections that extended the recovery period to 2022, while others such as Eagle County Regional (EGE) are projecting that a busier ski season will cause passenger traffic to increase more quickly. Other airports are relying on summertime activities such as flight testing at Gunnison-Crested Butte Regional (GUC) and the Telluride Film Festival planned for early September. Both airports cited these specific events as the factor that will determine how quickly traffic may return and if they are cancelled or delayed, there could be a disruption in activities throughout the rest of the year and into 2021. The projections of the mountain airports are also largely dependent on the snow conditions and capacity restrictions at winter resorts during the 2020-2021 season. However, as it is too early to predict these circumstances, the projections have significant assumptions and could change significantly as the year progresses.

0.5.2. Potential Economic Impacts to Colorado Airports

As the airline industry continues its slow path to recovery from the pandemic, airports, airlines and industry organizations are working to identify the potential total impacts in an effort to minimize the long term effects of the pandemic. In the context of this analysis, specifically in relation to the findings of the 2020 CEIS, it is important to understand the potential quantitative impacts of the pandemic. As such, this analysis has identified three scenarios and provided a high-level analysis of the potential effects that a change in commercial and GA passenger traffic at Colorado's airports could have on the overall economic impacts of Colorado's airport system.

The CEIS categorized economic impacts of the Colorado airport system by three types: on-airport activities, visitor spending, and off-airport cargo, which are discussed further in **CEIS Chapter 5. Airport Economic Impact Findings.** The most significant change in economic impact is estimated to be from the reduction in visitor spending at both commercial service and GA airports. Visitors impact an airport's economic impact, but have the most significant effect on other industries outside of the airport and aviation sector such as lodging, food and beverage, and retail. During the airport outreach conducted for this analysis, no airport managers reported changes among airport sponsor staffing. Many airport managers noted staffing changes to airlines and rental cars, as well as FBOs, restaurants, and MRO shops, but were unable to provide specific quantitative information. Many noted they were unaware of specific long-term layoffs, but did know of reductions in employee hours or reduced seasonal staffing at the end of the winter season. As such, it is difficult to develop a specific scenario that might reflect likely changes to on-airport activities, either from airport administration or tenants. Furthermore, no airport reported any significant delays to large federally funded capital improvement projects, making it unnecessary to develop a scenario that considers changes to airport construction activities. Finally, given that air cargo activities have actually increased as a result of the stay-at-home orders resulting in more e-commerce and the influx of medical supplies, a scenario for decreases in activities in the off-airport cargo sector is unnecessary.

Tables 0.7, 0.8, and 0.9 present the respective potential effects that a 10 percent, 30 percent, and 50 percent decline in 2020 passenger traffic would have on the visitor spending-related impacts individually, as well as the total statewide economic impacts of the Colorado airport system as determined in the 2020 CEIS. These percentages were chosen based on both airport-reported projections and actual activity data from the first two months of the pandemic. This data was multiplied by data from an aggregate recovery timeline derived from the scenarios presented in **Section 0.5.1** to estimate the total activity reductions at airports statewide for the remainder of 2020. These estimates were then analyzed, and percentages were selected to represent scenarios that included low, medium, and high declines in passenger activity. Additionally, these tables present the statewide economic impacts for calendar year 2018 as reported by the 2020 CEIS and provide a comparison between these findings and the potential economic impacts that would be realized given the various potential annual reductions in passenger traffic. As demonstrated, the decline in visitor spending activities result in an uneven impact across the four indicators of statewide economic impact – jobs, payroll, value added, or business revenues. The percent reduction (10, 30, and 50) also doesn't necessarily reflect the same amount of change in total economic impact on a statewide basis. These scenarios reflect the important economic contributions of the state's airport system, even during an unprecedented event such as the pandemic. It is important to note that Denver International (DEN) accounts for 45 to 56 percent of Colorado's visitor spending activities, depending on the various indicators. As such, the actual impacts of the pandemic will be highly dependent on the changes to passenger traffic at DEN.

Table 0.7. Scenario #1: 10 Percent Decrease in Passenger Traffic

	Jobs	Payroll	Value Added	Business Revenues
2020 CEIS Statewide Economic Impacts	345,661	$16,173,035,000	$27,025,194,000	$48,613,199,000
Impacts to Visitor Spending	*-19,786*	*-$685,095,300*	*-$1,168,616,400*	*-$2,023,101,700*
Percent change from 2020 CEIS Findings	**-6%**	**-4%**	**-4%**	**-4%**
Scenario #1 Statewide Economic Impacts	325,875	$15,487,939,700	$25,856,577,600	$46,590,097,300

Source: 2020 CEIS, 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

Table 0.8. Scenario #2: 30 Percent Decrease in Passenger Traffic

	Jobs	Payroll	Value Added	Business Revenues
2020 CEIS Statewide Economic Impacts	345,661	$16,173,035,000	$27,025,194,000	$48,613,199,000
Impacts to Visitor Spending	*-59,358*	*-$2,055,285,900*	*-$3,505,849,200*	*-$6,069,305,100*
Percent change from 2020 CEIS Findings	-17%	-13%	-13%	-12%
Scenario #2 Statewide Economic Impacts	286,303	$14,117,749,100	$23,519,344,800	$42,543,893,900

Source: 2020 CEIS, 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

Table 0. 9 Scenario #3: 50 Percent Decrease in Passenger Traffic

	Jobs	Payroll	Value Added	Business Revenues
2020 CEIS Statewide Economic Impacts	345,661	$16,173,035,000	$27,025,194,000	$48,613,199,000
Impacts to Visitor Spending	*-98,931*	*-$3,425,476,500*	*-$5,843,082,000*	*-$10,115,508,500*
Percent change from 2020 CEIS Findings	-29%	-21%	-22%	-21%
Scenario #1 Statewide Economic Impacts	246,731	$12,747,558,500	$21,182,112,000	$38,497,690,500

Source: 2020 CEIS, 2020 CASP COVID-19 Impacts to Colorado Airports Questionnaire Results, June 2020

0.5.3. Future Trends

As the impacts of the pandemic have been so severe, it is highly unlikely that the aviation industry will return to its normal operating procedures and patterns from before the pandemic. As such, a series of trends have begun to emerge that will likely continue beyond the industry recovery period. These trends include a shift in consumer behaviors, numerous airline restructurings or consolidations, and airline fleet restructuring.

0.5.3.1 Shifts in Consumer Behaviors

The pandemic has forced millions of businessmen and women to shift how they do business from in-person meetings to using virtual meeting technology. The general success of such virtual business practices has illustrated to thousands of companies that travel may not be a necessity of doing business post-pandemic. As a result, there could be a decline in business air travel demand that extends beyond the recovery period. For those businesses that do travel, there could be a shift away from commercial flights towards the use of chartered business aircraft or purchase of GA aircraft. Charter operations have already become more popular during the pandemic as companies and travelers have opted to travel in smaller groups in a more isolated environment than a commercial passenger airline provides. Paramount Business Jets, a global charter aircraft operator, reported that charter requests in April increased 53 percent in North America and 103 percent globally. Additionally, charter operations have become more cost competitive with traditional airline flights as corporate charter aircraft operators are experiencing lower taxes with the 7.5 percent federal excise tax usually charged on charter flights suspended until 2021 by the CARES Act.[36]

0.5.3.2 Airline/Fleet Restructuring

After other significant events such as 9/11 or the 2008 Global Financial Crisis, the airline industry experienced drastic changes in both airline management and fleet structures. It is highly likely that the airline industry will similarly change as multiple airlines have already had to file for bankruptcy. Airlines could restructure or merge, creating a smaller number of large airlines, reducing overall competition and increasing airfare prices. This could boost the passenger segment briefly but could negatively affect overall passenger demand. As a result, airlines may focus on serving profitable routes, which, although it will boost traffic at select hub airports, will adversely affect regional airports. This shift could further reduce connectivity and lead to a reduction in overall economic activity for airports.

In addition to the reorganization of airline management and route structuring, airlines are likely to alter their aircraft fleets to maximize operating efficiency. Airlines have already started retiring older and larger aircraft and will most likely continue to do so while passenger demand remains below the 2019 baseline. As such, companies are retiring aircraft such as the Boeing 747 and Airbus A380 while shifting towards smaller or more efficient aircraft such as the Airbus A321LR and the Boeing 787. As a result, airports that have been built to accommodate heavy jet aircraft will soon be over-equipped, creating high overhead costs and adversely affecting large airports around the globe. Conversely, airports served only by smaller commercial aircraft have the potential to be served by larger aircraft depending on the airlines' fleet availability and route planning, causing a possible overextension of airport infrastructure capabilities.[37]

The airline industry may undergo other changes to cater to consumer preferences and improve overall safety in aviation. Notably, airlines and airports may continue heightened cleaning procedures onboard aircraft and in airports well beyond the industry's recovery period to maintain public confidence in the safety of air travel. Furthermore, airlines, airports and agencies such as the TSA may continue the use of additional passenger screening to identify travelers that may pose a risk of infecting other users. However, these changes may pose additional challenges and expenses for the industry and may be modified appropriately.

Finally, certain challenges that existed in the industry before the pandemic have changed but remain a threat to the stability of airlines and aviation. Specifically, the chronic pilot shortage that has existed in the industry for nearly a decade has quickly dissipated as airlines suspended hiring and furloughed thousands of pilots, with potentially more in October 2020. However, given that many airlines have offered early retirement to flight crews, this shortage will likely return as the airline industry recovers. This problem could be further exacerbated as prospective pilots delay or cancel their flight training due to poor career prospects, further constricting the pipeline of new pilots into the industry.

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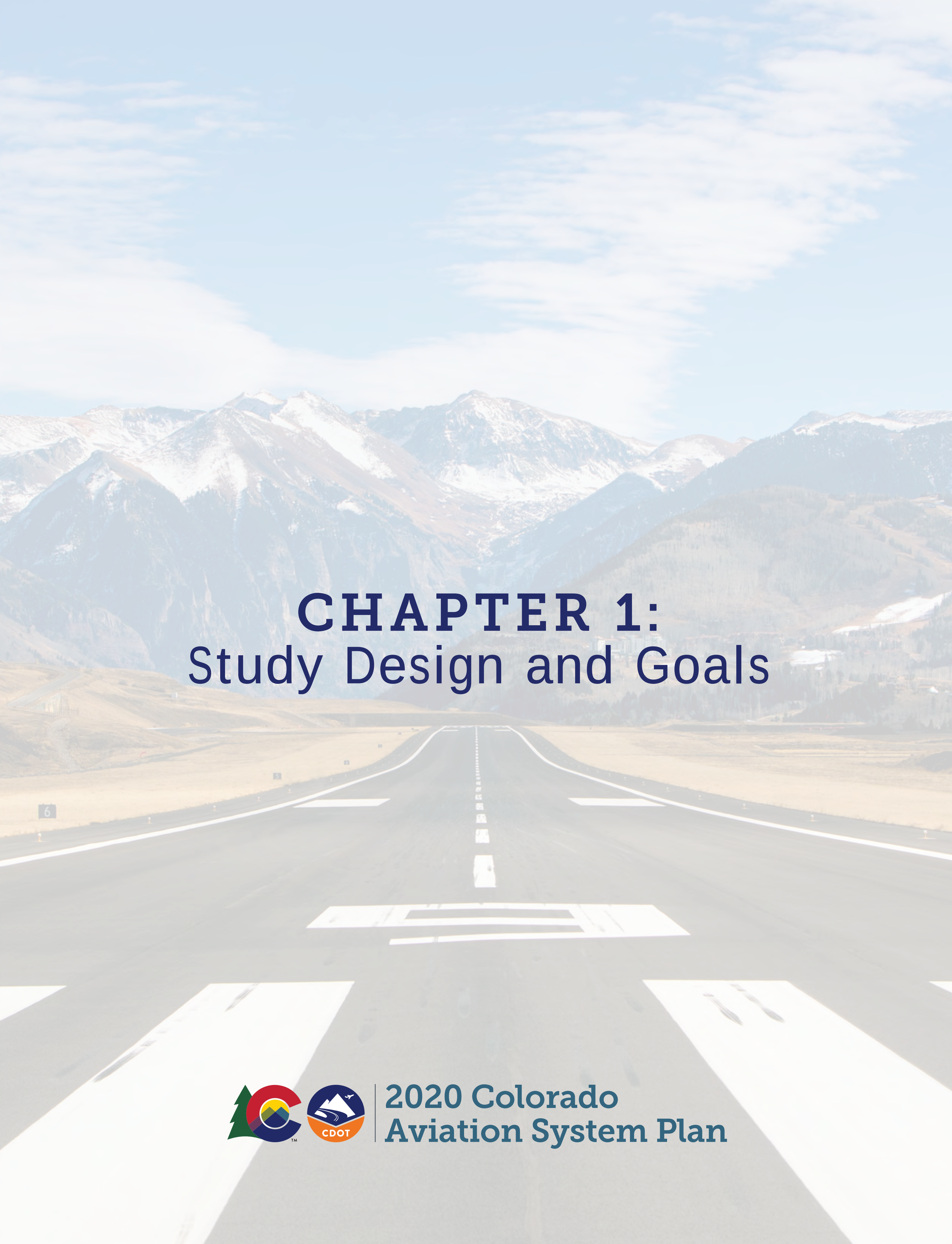
[36] NBAA (May 2020). "Lower Prices, Safety Concerns Drive Charter Resurgence". Available online at: https://nbaa.org/flight-department-administration/aircraft-operating-ownership-options/lower-prices-safety-concerns-drive-charter-resurgence/. (Accessed June 2020).
[37] Gittens, A. (May 2020). "COVID-19: Exploring the airport industry's path to economic recovery". Available online at: https://blog.aci.aero/covid-19-exploring-the-airport-industrys-path-to-economic-recovery/. (Accessed June 2020).

Therefore, airlines and aviation education programs will have to work in coordination to restore the supply of skilled pilots in order for the industry to recover fully and continue to grow in the coming years.

0.6. Summary

It is apparent that the COVID-19 pandemic has caused disruptions to the global economy and aviation industry that have not been experienced before. As such, this analysis sought to provide context for readers of the 2020 CASP and CEIS by discussing the overall situation surrounding the pandemic as well as the impacts of the crisis on the global aviation industry. Additionally, this analysis provides a focused review of the specific impacts of the pandemic on Colorado's commercial service and general aviation airports. Results from this postscript analysis can be compared to the findings of the 2020 CASP and CEIS to determine the current needs and impacts of the aviation industry and will provide an overview of the possible ways the aviation industry could recover from the crisis.



CHAPTER 1:
Study Design and Goals

2020 Colorado Aviation System Plan

Chapter 1. Study Design and Goals

1.1. Introduction

Colorado—known for its Rocky Mountains, world-class skiing, endless outdoor adventures, and many other unique activities and industries—is also home to over 65 publicly owned airports that support tourism, emergency response, manufacturing, shipping, and more. Whether these airports are used to reach a ski resort on vacation or remote communities in need of healthcare services, Colorado's system of airports provide access to, from, and within the Centennial State.

Providing a safe, efficient, and effective statewide aviation system is the core mission of the Colorado Department of Transportation (CDOT) Division of Aeronautics. The CDOT Division of Aeronautics undertakes several planning initiatives to maintain and enhance the state network of airports and establish a vision for aviation in Colorado. The CDOT Division of Aeronautics has been a pioneer in efforts to provide a safe, efficient, and sustainable air transportation system through innovative projects, such as the Colorado Airport Sustainability Program and the CDOT Division of Aeronautics' *2018 Strategic Plan*. As evidenced in these plans, the CDOT Division of Aeronautics recognizes the importance of planning in providing a prosperous future for aviation in the state.

A key plan historically used by the CDOT Division of Aeronautics to identify and prioritize aviation facility and service needs was the *2011 Colorado Aviation System Plan (CASP)*. In late 2018, the CDOT Division of Aeronautics embarked on a wholesale update to their 2011 CASP to reflect changes in the aviation industry, activity levels, facility needs, and more. Most importantly, this system plan update (2020 CASP) provides a fresh outlook on aviation in Colorado, including an overhaul of the goals previously guiding system development.

To complement the findings of the 2020 CASP, an economic impact study was conducted to realize the value of aviation activity in the state. The 2020 Colorado Aviation Economic Impact Study (CEIS) replaces the CDOT Division of Aeronautics' previous *2013 Economic Impact Study for Colorado Airports* and highlights the change in impact over time.

1.2. Study Process

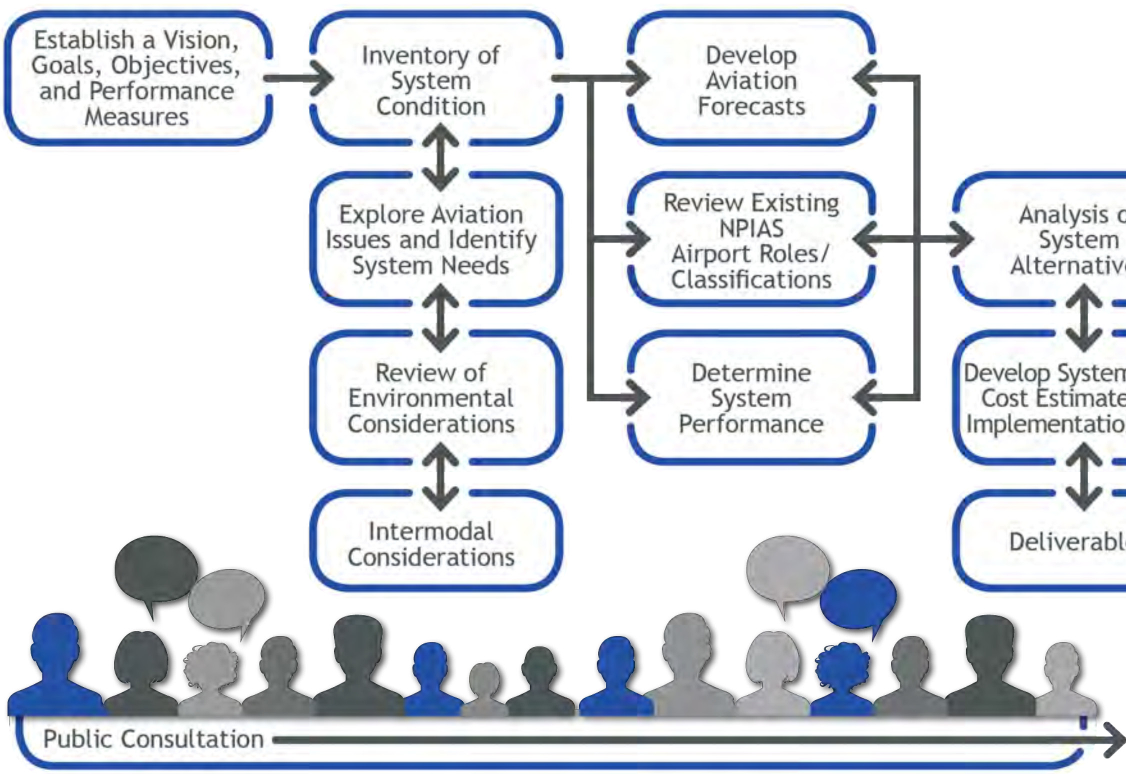
System plans are developed at the state-level but are typically guided by the Federal Aviation Administration (FAA) through Advisory Circular (AC) 150-5070-7, Change 1, *The Airport System Planning Process.* The FAA uses state aviation system plans at the federal-level to inform the national aviation system plan, known as the National Plan of Integrated Airport Systems (NPIAS). Many states also have publicly owned airports that are not included in the NPIAS but are important to their state systems as they accommodate aviation demand. These non-NPIAS airports are also included in many state aviation system plans, including the 2020 CASP. States and the FAA use system planning results to guide decision-making and distribute resources to develop a network of airports consistent with existing and future needs. This process is primarily achieved by coordinating the NPIAS with the federal Airports Capital Improvement Program (ACIP), which applies a systematic process for identifying, prioritizing, and assigning funds to those projects most critical for the National Airspace System (NAS).

Generally, system plans include the following non-sequential components:

- Establish System Goals and Measures
- Explore Aviation Issues
- Inventory System Assets
- Forecast System Demand
- Define Airport Roles
- Evaluate System Performance
- Identify System Needs
- Consider System Alternatives
- Recommend System Changes, Development, Funding, and Policy
- Identify Implementation Plan

The latest update to the AC calls for additional analyses, including evaluating airport needs relative to multimodal planning, and considering environmental conditions as a part of system plans. Each of these analyses were included in developing the 2020 CASP, as shown in **Figure 1.1**.

Figure 1.1. 2020 CASP Study Process



Source: Kimley-Horn, 2018

1.3. Goal Considerations

Core to developing a system plan is establishing goals and measurable actions to achieve those goals; this is the first step in system plan development. These goals determine measurement of the system's performance and ultimately the recommendations that result when a system plan is completed (which are then incorporated at the federal-level in the NPIAS, where appropriate).

To help guide the development of the 2020 CASP goals, a review of existing resources including the *2011 CASP*, the current Statewide Transportation Plan 2040 (*Transportation Matters [SWP 2040]*), the CDOT Division of Aeronautics' *2018 Strategic Plan*, and other state system plans was conducted. Additionally, feedback and suggestions for system goals were provided by members of the 2020 CASP Planning Advisory Committee (PAC) who represent Colorado's numerous aviation system stakeholders.

1.3.1. 2011 CASP

The 2011 CASP goals were reviewed at the onset of the study. Through discussion with the CDOT Division of Aeronautics staff, it was determined that new goals and measures were needed to achieve CDOT's vision for Colorado aviation and therefore the goals and measures from the 2011 CASP—which were carried forward from the 2005 plan—will not be used in the 2020 CASP.

1.3.2. CDOT Statewide Transportation Plan 2040, *Transportation Matters*

Coordinating and integrating state aviation system plans with other modal transportation plans has become increasingly important. The FAA has highlighted this importance in its 2015 update to AC 150-5070-7, Change 1, *The Airport System Planning Process,* suggesting additional emphasis be placed on the input and inclusion of intermodal transportation planning. According to the AC, an airport should be viewed as an element of the larger transportation system that serves a community, metropolitan area, or state.

CDOT regularly updates the Statewide Transportation Plan that considers all modes of transportation in Colorado. Previous versions of the CASP utilized goals established in the early 2000s, which do not align with the larger Statewide Transportation Plan. A key desire of the CDOT Division of Aeronautics was to align the goals of the 2020 CASP with the goals and measures of CDOT's latest SWP 2040. This multimodal plan utilizes four goals for the statewide transportation system: Safety, Mobility, Economic Vitality, and Maintaining the System. The plan also identifies objectives (descriptions of how goals will be achieved or the outcome of the goals) and performance measures (quantitative benchmarks used to calculate progress). **Table 1.1** presents the goals, objectives, and performance measures as reported in SWP 2040.

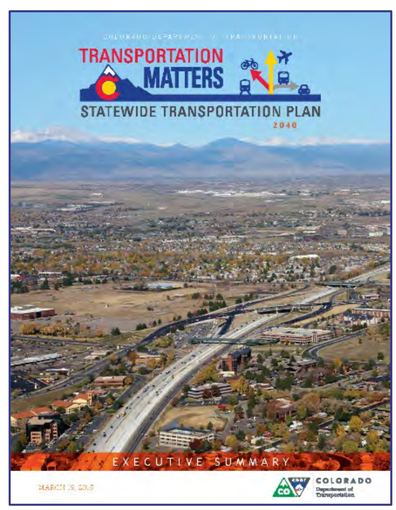


Table 1.1. Goals, Objectives, and Performance Measures from SWP 2040

Goals, Objectives, and Performance Measures from STP 2040			
Goals	**Objectives**		**Performance Measures**
Safety: Move Colorado toward zero deaths by reducing traffic-related deaths and serious injuries.	*Fatalities and Serious Injuries*	Reduce the number and rate of all transportation fatalities and serious injuries, economic impact of crashes, and the number of bicyclist and pedestrian fatalities and serious injuries.	Number of fatalities Fatalities per vehicle miles traveled (VMT) Number of serious injuries Serious injuries per VMT Economic impact of crashes Number of bicyclist and pedestrian fatalities involving motorized vehicles Number of bicyclist and pedestrian serious injuries involving motorized vehicles
Mobility: Improve mobility and connectivity with a focus on operations and transportation choice.	*Highways*	Prevent the spread of congestion to uncongested highway segments and the growth of congested highway segments.	Planning Time Index – Additional time required above the time needed at free-flow speed to ensure on-time arrival • Interstates • National Highway System • Colorado Freight Corridors
	Transit	Increase ridership of small urban and rural transit agencies: maintain or increase the total number of miles of regional, interregional, and inter-city passenger services operated for the general public.	Transit Utilization – Ridership statewide and by subcategory: small urban and rural Transit Connectivity – Miles transit vehicles are available to general public
	Bicycle and Pedestrian	Develop data and resources to identify level of service measures provided by bicycle and pedestrian facilities.	Under development – obtaining data
Economic Vitality: Improve the competitive-ness of the state economy through strategic transportation investments.	*Freight and Economic Growth*	Support strategies and operational improvements that facilitate multimodal freight movement and promote state, regional, and local economic goals.	Under development – obtaining economic, road/rail, and freight data
	Job Access	Ensure transportation system provides access to jobs within reasonable commute times.	Under development – obtaining economic, road/rail, and freight data

Goals, Objectives, and Performance Measures from STP 2040			
Goals	**Objectives**		**Performance Measures**
Maintaining the System: Preserve and maintain the existing transportation system.	*Assets*	Maintain the condition of bridges; highway pavement; other assets (buildings, ITS, roadway equipment, culverts, geohazard sites, tunnels, traffic signals, and walls); and rural transit fleet vehicles.	Condition of National Highway System bridges and pavement condition, including Interstates
			Condition of bridges and pavement on State Highway System
			Condition of other assets
	Annual Maintenance	Maintain snow and ice removal performance and overall maintenance of the highway system.	Level of service for snow and ice removal
			Overall maintenance level of service achieved for the highway system
	Transit	Maintain the percentage of rural Colorado transit fleet vehicles operating in at least fair condition. Require all CDOT transit grantees to have Asset Management Plans by 2017.	Transit asset condition

Source: CDOT Statewide Transportation Plan 2040, Transportation Matters, 2015

1.3.3. CDOT Division of Aeronautics 2018 Strategic Plan

In addition to the SWP 2040, the CDOT Division of Aeronautics' mission and vision statements from the *2018 Strategic Plan* were reviewed for consideration in developing 2020 CASP goals and associated measures. Acknowledging these statements in developing the CASP goals provides a direct link between what the CDOT Division of Aeronautics is trying to achieve as an agency with how the state aviation system is evaluated and the system's performance is measured.

<u>Mission Statement</u>: The mission of the CDOT Division of Aeronautics is to *support Colorado's multimodal transportation system by advancing a safe, efficient, and effective statewide air and space system through collaboration, investment, and advocacy.*

<u>Vision Statement</u>: The vision of the CDOT Division of Aeronautics is to *be the leading state aviation organization by enhancing the efficiency, economic benefit, and sustainability of Colorado's air and space system through funding, innovation, education, and pioneering initiatives.*

1.3.4. Other State System Plans

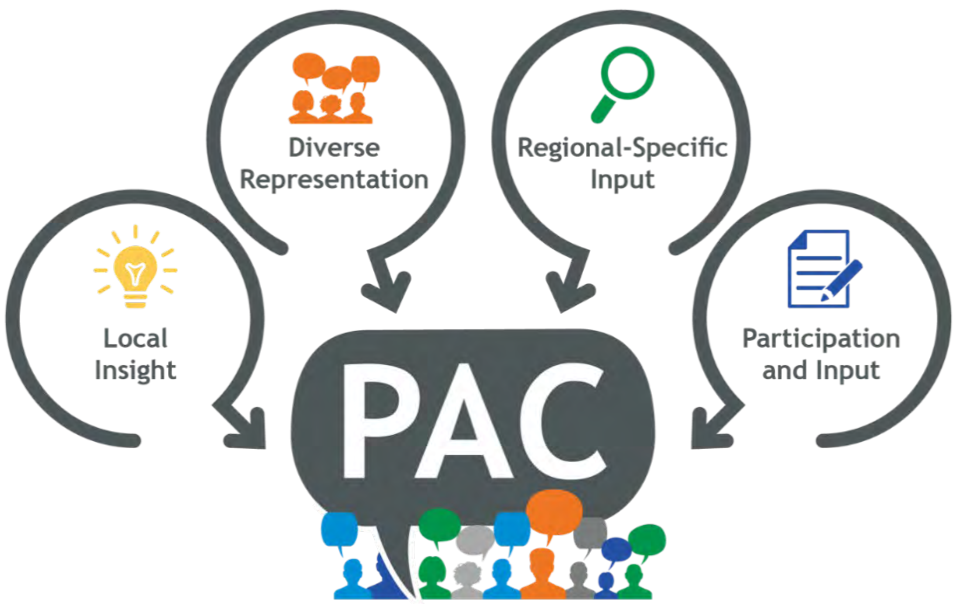
System plans from a variety of states were analyzed to understand various methods of goal development and identify measures that might also be applicable to the state of Colorado. Plans from Idaho, Iowa, Arizona, Washington, South Dakota, Florida, and New Mexico were gathered to represent a cross section of goal and measurement development strategies. Several of the performance measures were found to be appropriate to Colorado and were considered during the process.

1.3.5. Planning Advisory Committee

The 2020 CASP was guided by a PAC assembled by the CDOT Division of Aeronautics at the beginning of the study. This committee was engaged at every stage of the study process to provide important guidance and regional-specific insight into the future of aviation in Colorado. The PAC was composed of stakeholders from across the state with a broad range of knowledge and experience in airports, aviation, and other statewide issues impacting the airport system, as illustrated in **Figure 1.2**. The PAC includes representatives from the following types of organizations:

- Federal and state agencies (FAA, CDOT Division of Transportation Development, and CDOT Division of Aeronautics)
- Colorado Aeronautical Board (CAB)
- Airports, including general aviation (GA) and commercial service facilities
- Colorado Airport Operators Association (CAOA)

Figure 1.2. 2020 CASP PAC Role



Source: Kimley-Horn, 2018

Preliminary goals and measures identified through the CDOT Division of Aeronautics' review of existing resources were presented to the PAC for their feedback. An interactive exercise was conducted to gauge PAC members' support of each preliminary goal and measure and to solicit additional ideas for others that should be considered.

1.4. CASP Goals and Measures

After extensive review and consideration of existing resources and input from the PAC, a total of four goals, 14 performance measures, and 17 system indicators were established for the 2020 CASP. The following definitions describe the differences between each measurement type:

- **Goals:** Provide direction for desired results for the state system in key result areas and serve as a starting point for defining objectives and performance-related metrics
- **Objectives:** Descriptions of how goals will be achieved or the outcomes of the goals
- **Performance Measures (PMs):** Directly relate to measuring the system's performance in meeting the goals
- **System Indicators (SIs):** Informational analyses that inform and indirectly relate to the system's performance

It is especially important to understand the differences between PMs and SIs. PMs are measurements for which the CDOT Division of Aeronautics has some level of influence or control over. SIs are "informational" and indicate progress but may not be influenced by actions of the CDOT Division of Aeronautics.

Each of the four goals (illustrated in **Figure 1.3**) and associated measures and indicators are described in the following pages.

Figure 1.3. 2020 CASP Goals

Source: Kimley-Horn, 2018

1.4.1. Goal: Safety and Efficiency

*Advance Colorado's airport system by promoting and preserving **safe and efficient** facilities, on and off airports.*

Providing safe facilities and operating environments for the users of Colorado's aviation system helps preserve their continued operation and enhance community relations. **Table 1.2** outlines the Safety and Efficiency goal, PMs, SIs, and associated relevancy.

Table 1.2. Safety and Efficiency Goal, Performance Measures, and System Indicators

Goal		Performance Measures and System Indicators		Relevancy
Safety and Efficiency	Advance Colorado's airport system by promoting and preserving **safe and efficient** facilities, on and off airports.	Performance Measures	Percent of airports with approaches negatively impacted by obstructions	Promotes the safety of pilots, passengers, and public in and around the airport environs
			Percent of airports that have full perimeter wildlife fencing	
			Percent of airports that have adopted appropriate land use controls	
			Percent of NPIAS airports that meet current FAA design standards under AC 150/5300-13A	
		System Indicators	Percent of airports with adequate crosswind coverage	Promotes the safety of pilots, passengers, and public in and around the airport environs
			Percent of airports that meet runway length requirements for existing critical aircraft	
			Percent of airports that have a formalized program for receiving, managing, and responding to on-/near-airport Unmanned Aircraft Systems (UAS) use requests	
			Percent of airports with the level of activities to warrant an Air Traffic Control Tower (ATCT)	
			Percent of communities with emergency responders that have basic training in Aircraft Rescue and Fire Fighting (ARFF)	Provides critical ground-based services to people and aircraft in emergency situations
			Percent of airports that support aerial firefighting	Supports critical rapid-response aerial firefighting activities across the state
			Percent of airports that support medical emergency/evacuation aircraft	

Source: Kimley-Horn, 2018

1.4.2. Goal: Access and Mobility

*Provide Colorado's airports with infrastructure and sufficient capacity enabling the public adequate **access and mobility** utilizing the aviation system.*

Providing reasonable access to facilities and services that can accommodate demand helps promote air mobility across the state and beyond. **Table 1.3** outlines the Access and Mobility goal, performance measures, system indicators, and associated relevancy.

Table 1.3. Access and Mobility Goal, Performance Measures, and System Indicators

<table>
<tr><th colspan="2">Goal</th><th colspan="2">Performance Measures and System Indicators</th><th>Relevancy</th></tr>
<tr><td rowspan="7">Access and Mobility</td><td rowspan="7">Provide Colorado's airports with infrastructure and sufficient capacity to access the versatile aviation activities and facilities in the state and provide adequate mobility for users.</td><td rowspan="4">Performance Measures</td><td>Percent of airports with a dedicated snow removal equipment (SRE) building</td><td>Extends the life of airport assets that are critical to an operational airport</td></tr>
<tr><td>Percent of population within a 30-minute drive time of an all-weather runway</td><td>Provides airport accessibility during inclement weather conditions, especially for emergency response/transport</td></tr>
<tr><td>Percent of airports with adequate terminal capacity</td><td>Supports airport user throughput, both airside and landside</td></tr>
<tr><td>Percent of airports with adequate transient hangar spaces</td><td>Supports transient aircraft overnight parking</td></tr>
<tr><td rowspan="3">System Indicators</td><td>Percent of airports that provide ground transportation (courtesy car or other)</td><td>Provides transportation services to transient airport users</td></tr>
<tr><td>Percent of population within a 30-minute drive time of a system airport</td><td>Supports access to airports deemed significant by the CDOT Division of Aeronautics</td></tr>
<tr><td>Percent of airports providing access to remote and rural communities</td><td>Provides a gateway to remote communities, especially in emergency situations</td></tr>
</table>

Source: Kimley-Horn, 2018

1.4.3. Goal: Economic Sustainability

*Support **sustainable economic** growth and development and continue Colorado's existing status as a leader in technology, testing, and the aerospace industry**.***

Equipping airports with the facilities and services to support business use of Colorado's aviation system will help expand the economic impact of Colorado airports. **Table 1.4** outlines the Economic Sustainability goal, performance measures, system indicators, and associated relevancy.

Table 1.4. Economic Sustainability Goal, Performance Measures, and System Indicators

Goal		Performance Measures and System Indicators		Relevancy
Economic Sustainability	Support **sustainable economic** growth and development and continue Colorado's existing status as a leader in technology, testing, and the aerospace industry**.**	Performance Measures	Percent of airports with necessary fuel type, available 24/7	Indicates demand and revenue generation at an airport
			Percent of airports that support the aerospace manufacturing, technology, and/or testing industry	
			Percent of airports with adequate utilities	Facilitates aviation and non-aviation development at an airport
		System Indicators	Percent of airports with active development partnerships with chambers of commerce, tourism bureaus, organizations, industries, governments, and recreational user groups	Demonstrates the airport is advancing business opportunities and developing partnerships
			Percent of airports with business parks or landside real estate development	
			Percent of airports recognized in local and/or regional comprehensive plans	Protects the airport from encroachment and indicates a relationship with the community
			Percent of airports that support aerial agricultural application	Supports the agriculture industry

Source: Kimley-Horn, 2018

1.4.4. Goal: System Viability

*Preserve airport **system** assets to promote fiscal responsibility and **sustainable**, cost-effective investments to ensure the system's long-term viability.*

Supporting projects that preserve infrastructure and further environmental and operational viability will help save limited resources. **Table 1.5** outlines the System Viability goal, performance measures, system indicators, and associated relevancy.

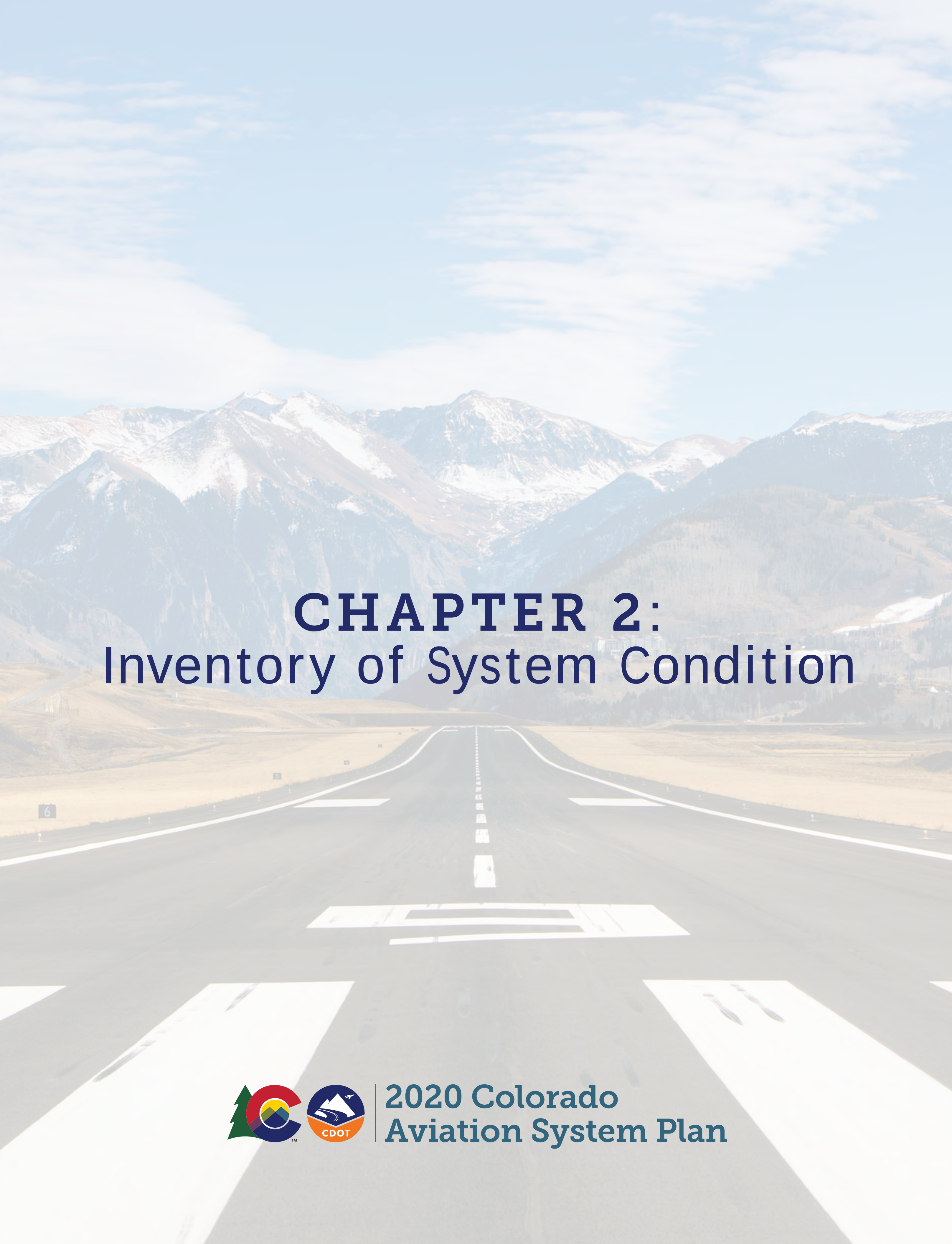
Table 1.5. System Viability Goal, Performance Measures, and System Indicators

Goal		Performance Measures and System Indicators		Relevancy
System Viability	Preserve, maintain, and enhance airport **system** assets through cost-effective investments to ensure the system's long-term viability.	Performance Measures	Percent of airports with certified on-site weather reporting (AWOS or ASOS)	Provides weather reporting information to pilots in a state that experiences dynamic weather conditions
			Percent of airports with pavement maintenance programs	Demonstrates responsible use of funds by devoting resources to extend the life of airport pavements
			Percent of airports with an average runway and taxiway Pavement Condition Index (PCI) of 70 or greater	
		System Indicators	Percent of airports that support aviation educational programs	Promotes aviation in the state and develops the next generation of aviation and aerospace professionals
			Percent of airports with a sustainability plan	Provides guidance on sustainable actions to reduce environmental impacts, promote stable economic growth, and achieve social progress
			Number of Colorado pilots per capita	Indicates Colorado's relationship to the national commercial pilot shortage

Source: Kimley-Horn, 2018

1.5. Summary

The goals, measures, and indicators presented in **Table 1.2** through **Table 1.5** form the foundation of the 2020 CASP. All subsequent tasks in developing the 2020 CASP are based upon the direction provided by these measures. Specifically, these measures and indicators are used to inventory system condition, calculate performance, identify successes and shortfalls, develop recommendations, and prioritize system needs.



CHAPTER 2:
Inventory of System Condition

2020 Colorado
Aviation System Plan

Chapter 2. Inventory of System Condition

2.1. Introduction

A critical step in the Colorado Aviation System Plan (CASP) planning process was to identify and gather information on existing facilities and services that are present at system airports. These data serve as the baseline for each variable chosen to evaluate the overall airport system performance. This chapter presents the results of an extensive data collection process that involved airports, the Colorado Department of Transportation (CDOT) Division of Aeronautics, and the Federal Aviation Administration (FAA). The results of the inventory data collection effort are presented in the following sections:

- Existing System
- Inventory Process
- Airside Facilities
- Landside Facilities
- Airport Activity
- Mobility and Access
- Airport Safety
- Airport Planning
- Land Use Compatibility and Business Development

2.2. Existing System

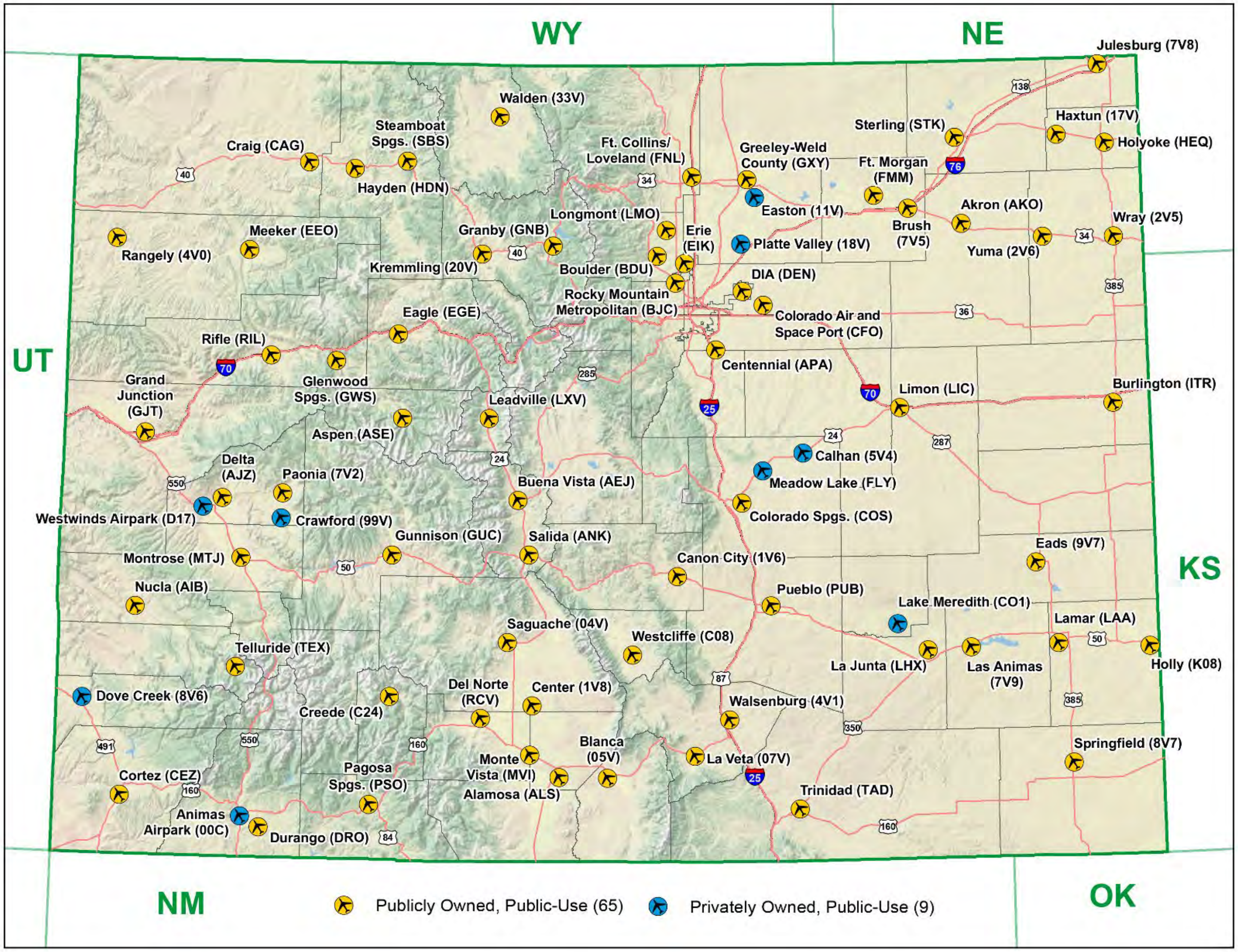
Colorado is home to nearly 450 aeronautical facilities, including airports, airstrips, airparks, helicopter pads, and seaplane bases. These facilities include a mixture of publicly and privately owned, as well as public- and private-use. The inventory process started with identification of the airports eligible for inclusion in the CASP.

2.2.1. Colorado Airports

The Airport Safety Data Program is the FAA's mechanism for obtaining the information on landing facilities, both privately-owned and publicly-owned, that are reported using the FAA Form 5010, Airport Master Record. The data from Form 5010 is maintained within the FAA's Aeronautical Information Service and included in the National Flight Data Center (NFDC). According to the NFDC Facilities Database, Colorado currently has 448 aeronautical facilities, of which 374 are private-use and 74 are public-use.

The 74 public-use airports in Colorado are considered the "Colorado System". These airports are shown in **Figure 2.1**.

Figure 2.1. Colorado System of Airports



Source: Kimley-Horn, 2019

2.2.2. 2020 CASP Airports

A critical factor for inclusion in the CASP is an airport's eligibility to receive state funding from CDOT Division of Aeronautics. Colorado Revised Statute (CRS 43-10) limits funding eligibility to airports owned by public agencies and privately-owned airports included in the FAA's National Plan of Integrated Airport Systems (NPIAS). This eliminates the 374 private-use airports as well as eight of the nine public-use, privately-owned airports from the system plan. The CDOT Division of Aeronautics and Project Advisory Committee (PAC) determined that the 2020 CASP would include the 65 publicly owned, public-use airports and Meadow Lake Airport (FLY)[1]. Of these 66 CASP airports, 49 are included in the FAA's NPIAS which means they have been recognized by the FAA as essential to the national air transportation system and are eligible for FAA funding through the Airport Improvement Program (AIP). The remaining 17 airports are considered Non-NPIAS as they are not recognized in the FAA's NPIAS and are ineligible for FAA funding. The 66 airports included in the 2020 CASP are presented alphabetically by associated city in **Table 2.1** starting with the commercial service airports, followed by GA airports. Fourteen of the 66 airports support scheduled Part 121, Part 135, or Part 380 commercial service, the remaining 52 support general aviation (GA) operations.

Table 2.1. 2020 CASP Airports[2]

Associated City	Airport Name	FAA ID	NPIAS Status	Ownership	Use
Commercial Service					
Alamosa	San Luis Valley Regional/Bergman Field	ALS	NPIAS	Public	Public
Aspen	Aspen-Pitkin County/Sardy Field	ASE	NPIAS	Public	Public
Colorado Springs	City of Colorado Springs Municipal	COS	NPIAS	Public	Public
Cortez	Cortez Municipal	CEZ	NPIAS	Public	Public
Denver	Denver International	DEN	NPIAS	Public	Public
Durango	Durango-La Plata County	DRO	NPIAS	Public	Public
Eagle	Eagle County Regional	EGE	NPIAS	Public	Public
Grand Junction	Grand Junction Regional	GJT	NPIAS	Public	Public
Gunnison	Gunnison-Crested Butte Regional	GUC	NPIAS	Public	Public
Hayden	Yampa Valley	HDN	NPIAS	Public	Public
Fort Collins/ Loveland	Northern Colorado Regional	FNL	NPIAS	Public	Public
Montrose	Montrose Regional	MTJ	NPIAS	Public	Public
Pueblo	Pueblo Memorial	PUB	NPIAS	Public	Public
Telluride	Telluride Regional	TEX	NPIAS	Public	Public

[1] Meadow Lake Airport (FLY) is a privately owned, public-use airport located northeast of Colorado Springs. FLY was included as a CASP airport because of its classification as a reliever in the National Plan of Integrated Airport Systems (NPIAS) which makes the airport eligible for federal funding.
[2] The airport names for the following will be modified for the remainder of the CASP to reflect their more commonly referenced names as follows: San Luis Valley Regional, Aspen-Pitkin County, and Colorado Springs Municipal for commercial service airports; Las Animas-Bent County, Cuchara Valley, and Steamboat Springs for general aviation airports.

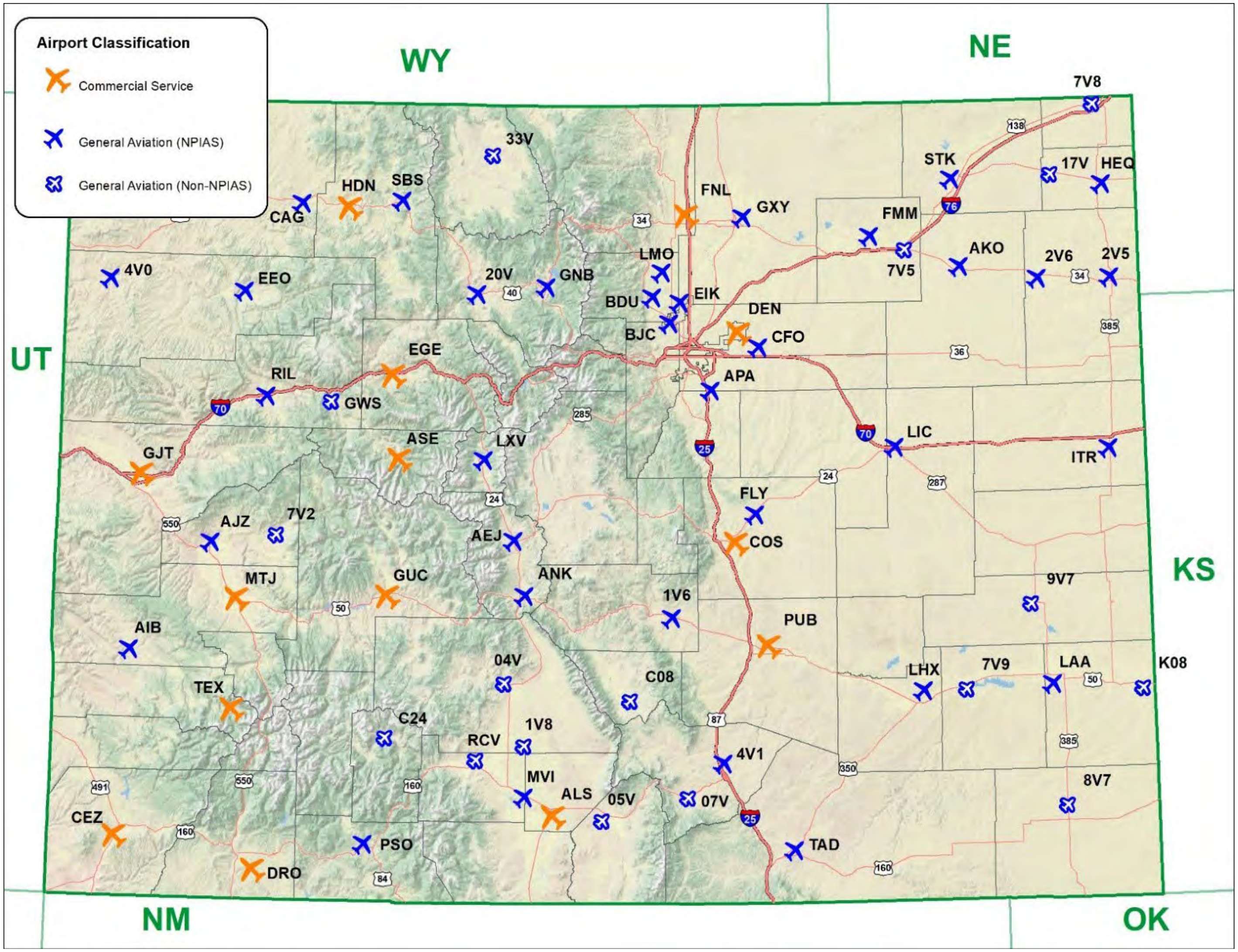
Associated City	Airport Name	FAA ID	NPIAS Status	Ownership	Use
			General Aviation		
Akron	Colorado Plains Regional	AKO	NPIAS	Public	Public
Blanca	Blanca	05V	Non-NPIAS	Public	Public
Boulder	Boulder Municipal	BDU	NPIAS	Public	Public
Brush	Brush Municipal	7V5	Non-NPIAS	Public	Public
Buena Vista	Central Colorado Regional	AEJ	NPIAS	Public	Public
Burlington	Kit Carson County	ITR	NPIAS	Public	Public
Canon City	Fremont County	1V6	NPIAS	Public	Public
Center	Leach	1V8	Non-NPIAS	Public	Public
Colorado Springs	Meadow Lake	FLY	NPIAS	Private	Public
Craig	Craig-Moffat	CAG	NPIAS	Public	Public
Creede	Mineral County Memorial	C24	Non-NPIAS	Public	Public
Del Norte	Astronaut Kent Rominger	RCV	Non-NPIAS	Public	Public
Delta	Blake Field	AJZ	NPIAS	Public	Public
Denver	Centennial	APA	NPIAS	Public	Public
Denver	Rocky Mountain Metropolitan	BJC	NPIAS	Public	Public
Denver	Colorado Air and Space Port	CFO	NPIAS	Public	Public
Eads	Eads Municipal	9V7	Non-NPIAS	Public	Public
Erie	Erie Municipal	EIK	NPIAS	Public	Public
Fort Morgan	Fort Morgan Municipal	FMM	NPIAS	Public	Public
Glenwood Springs	Glenwood Springs Municipal	GWS	Non-NPIAS	Public	Public
Granby	Granby-Grand County	GNB	NPIAS	Public	Public
Greeley	Greeley-Weld County	GXY	NPIAS	Public	Public
Haxtun	Haxtun Municipal	17V	Non-NPIAS	Public	Public
Holly	Holly	K08	Non-NPIAS	Public	Public
Holyoke	Holyoke	HEQ	NPIAS	Public	Public
Julesburg	Julesburg Municipal	7V8	Non-NPIAS	Public	Public
Kremmling	Mc Elroy Airfield	20V	NPIAS	Public	Public
La Junta	La Junta Municipal	LHX	NPIAS	Public	Public
La Veta	Cuchara Valley at La Veta	07V	Non-NPIAS	Public	Public
Lamar	Lamar Municipal	LAA	NPIAS	Public	Public
Las Animas	City of Las Animas-Bent County	7V9	Non-NPIAS	Public	Public
Leadville	Lake County	LXV	NPIAS	Public	Public
Limon	Limon Municipal	LIC	NPIAS	Public	Public
Longmont	Vance Brand	LMO	NPIAS	Public	Public
Meeker	Meeker/Coulter Field	EEO	NPIAS	Public	Public
Monte Vista	Monte Vista Municipal	MVI	NPIAS	Public	Public
Nucla	Hopkins Field	AIB	NPIAS	Public	Public
Pagosa Springs	Stevens Field	PSO	NPIAS	Public	Public

Associated City	Airport Name	FAA ID	NPIAS Status	Ownership	Use
Paonia	North Fork Valley	7V2	Non-NPIAS	Public	Public
Rangely	Rangely	4V0	NPIAS	Public	Public
Rifle	Rifle Garfield County	RIL	NPIAS	Public	Public
Saguache	Saguache Municipal	04V	Non-NPIAS	Public	Public
Salida	Harriet Alexander Field	ANK	NPIAS	Public	Public
Springfield	Springfield Municipal	8V7	Non-NPIAS	Public	Public
Steamboat Springs	Steamboat Springs/Bob Adams Field	SBS	NPIAS	Public	Public
Sterling	Sterling Municipal	STK	NPIAS	Public	Public
Trinidad	Perry Stokes	TAD	NPIAS	Public	Public
Walden	Walden-Jackson County	33V	Non-NPIAS	Public	Public
Walsenburg	Spanish Peaks Airfield	4V1	NPIAS	Public	Public
Westcliffe	Silver West	C08	Non-NPIAS	Public	Public
Wray	Wray Municipal	2V5	NPIAS	Public	Public
Yuma	Yuma Municipal	2V6	NPIAS	Public	Public

Sources: FAA's NPIAS 2019-2023; FAA's NFDC 2019; Kimley-Horn, 2019

Figure 2.2 depicts the locations of the 66 CASP airports, differentiated by type of use (commercial service and GA) and inclusion in the NPIAS.

Figure 2.2. 2020 CASP Airports



Source: Kimley-Horn, 2019

2.3. Inventory Process

Obtaining accurate and complete data to assess the existing system's condition and performance is critical to the foundation of the 2020 CASP. Subsequent tasks rely on the data compiled during the inventory effort, such as evaluation of system performance and development of system recommendations.

A multi-prong data collection approach was used to complete a comprehensive inventory of the facilities and services available at the 66 CASP airports. To initiate the inventory process, an Inventory & Data Form was prepared, identifying all the essential data points required to evaluate the system. These data points included those necessary to measure the system's performance based on the established system goals, performance measures (PMs), and system indicators (SIs) as presented in **Chapter 1. Study Design and Goals.** Before the forms were issued to airport representatives (in most cases, the airport manager served as the representative), they were pre-populated with information specific to each individual airport. Only some of the data was pre-populated as many of the data points were not available from the FAA or other industry sources. Packages were distributed to airports with letters describing the purpose of the study and a hard copy of each airport's individual pre-populated Inventory & Data Form.

Through follow-up correspondence, the purpose of the study was further explained, and site visits were scheduled with each airport's representative. From November 2018 through February 2019, airport site visits were conducted throughout Colorado. During the site visit, assistance to the airport representative was offered to complete the Inventory and Data Form. Further, the site visits were used to discuss land ownership and land use concerns surrounding each airport. FAA safety areas (such as Federal Aviation Regulation [FAR] Part 77 Imaginary Surfaces (refer to section 2.10.2), and Runway Protection Zones [RPZs]) were plotted on aerial images for each airport in advance of the site visits to facilitate discussion regarding land use concerns, especially within the RPZ. Most Inventory & Data Forms were not completed in full during the airport site visit due to the extensive nature of the data request. As such, follow-up correspondence was made with the necessary airport representatives as needed in an attempt to complete the data set.

As a supplement to the inventory form and site visits, the following sources were gathered and examined for a more in-depth analysis of the airports and the system:

- FAA's Terminal Area Forecast (TAF)
- FAA's 5010 Master Record forms for individual airports
- FAA's National Flight Data Center (NFDC)
- Airport master plans and Airport Layout Plans (ALPs)[3]
- CDOT's 2018 Pavement Condition Index (PCI) Report

[3] Colorado Airport Master Plans and Airport Layout Plans were obtained if possible during on-site visits, however, the majority were obtained before the data collection effort from the Denver FAA Airports District Office (ADO) and CDOT files.

In some instances, data was not available and was not provided by some system airports despite multiple attempts in person and over email and phone to collect the data. The tables in this chapter note "N/P" for "not provided" to reflect data that was not obtained from airports.

2.4. Airside Facilities

The following section details key airside facilities at CASP airports in 2018. This section is not all-inclusive of the facilities present at system airports. The facilities identified in this section are the subject of system performance measures or system indicators that are assessed in **Chapter 6. Current System Performance**.

2.4.1. Runways

The dominant feature on any airport is its runway(s). The pavement dimensions, surface type[4], and associated lighting, NAVAIDs, and surrounding safety areas determine which aircraft under which conditions can be operated in a safe, efficient, and regulatory-compliant manner. The following documents the physical and operational characteristics of the runways at Colorado's system airports.

2.4.1.1. Runway Length

Of the 66 primary runways[5] analyzed in the CASP, eight measure at least 10,000 feet in length. These are located at Denver International (DEN), City of Colorado Springs Municipal (COS), Grand Junction Regional (GJT), Greeley-Weld County (GXY), Yampa Valley (HDN), Montrose Regional (MTJ), Pueblo Memorial (PUB), and Centennial (APA). The shortest primary runways in the system are located at Glenwood Springs Municipal (GWS) and Haxtun Municipal (17V) which are 3,305 feet and 3,860 feet, respectively. Fifty-one runways measure at least 5,000 feet in length, a generic minimum length considered as a potential indicator of an airport's ability to accommodate many corporate aircraft[6]. Twenty-seven (41 percent) airports in the system have multiple runways. Primary runway lengths are summarized in **Table 2.4**.

2.4.1.2. Airport Reference Code (ARC)

The FAA classifies airports by an Airport Reference Code (ARC) which subsequently drives the overall planning and design criteria for airports. Establishing an ARC starts with selecting a "critical aircraft" or "design aircraft" that uses, or is expected to use, the runway. The critical aircraft is defined as the most demanding aircraft conducting at least 500 annual operations on the runway. An airport's critical aircraft can reflect either a specific aircraft model or a grouping of aircraft with similar characteristics considered collectively.

The ARC classification system is based on groupings of aircraft types relative to their operating performance and geometric characteristics. It is comprised of an alpha-numeric identifier representing the Aircraft Approach Category (AAC) and Airplane Design Group (ADG). The AAC reflects the approach speed of the critical aircraft, and the ADG reflects the critical aircraft's wingspan and tail height. The

[4] Surface type for this Chapter is noted as either paved or unpaved, however, more in-depth surface types were identified during the site visit.

[5] A primary runway is the runway that is preferred for takeoff and landing when an airport has multiple runways. Typically, the primary runway is the most accommodating runway at an airport.

[6] 5,000-foot long runways are the general standard for jet aircraft at mean sea level with a standard temperature of 59 degrees for aircraft weights between 12,500 pounds and 60,000 pounds. Elevation, temperature, and runway gradient should be considered when determining adequate runway lengths at Colorado airports for corporate aircraft.

classifications are summarized in **Table 2.2**. It should be noted that airports, runways, and aircraft can be referred to by these characteristics.

Table 2.2. Airport Reference Code Summary

Aircraft Approach Category		Airplane Design Group		
Category	Approach Speed	Group	Wing Span (ft.)	Tail Height (ft.)
A	Less than 91	I	Less than 49	Less than 20
B	91 to 120	II	49 to 78	21 to 29
C	121 to 140	III	79 to 117	30 to 44
D	141 to 165	IV	118 to 170	45 to 59
E	166 or Greater	V	171 to 213	60 to 65
		VI	214 up to but less than 262	66 up to but less than 80

Source: FAA AC 150/5300-13A, Change 1, Airport Design, 2019

Aircraft with approach speeds in categories A and B are typically smaller piston-engine aircraft, whereas C, D, and E are normally larger turboprop or turbine-powered aircraft. Similarly, the wingspan and tail height of small, piston-engine aircraft normally correspond to design group I. Typical aircraft in design group II include a Beechcraft King Air, Cessna Citation, or smaller Gulfstream business jets. Design group III includes larger corporate jets such as Gulfstream G500/550 and air carrier aircraft such as the DeHavilland Dash-8 and Boeing B-737. Design groups IV and V represent larger narrow-body and wide-body air carrier aircraft such as Boeing B-757 and B-747, respectively. Group VI includes the largest of aircraft, such as an Airbus A-380 or a C-5 military transport aircraft.

Based on airport responses and a review of individual airport planning documents (master plans and ALPs), there is a broad range of ARCs at Colorado airports, with most runways designed to B-II standards (42 percent). **Table 2.3** summarizes ARCs at CASP airports.

Table 2.3. ARC Summary

ARC	Number of Airports	Percentage of Total
A-I	8	12.1%
B-I	11	16.7%
B-II	28	42.4%
C-II	5	7.6%
C-III	3	4.5%
C-IV	3	4.5%
D-II	1	1.5%
D-III	3	4.5%
D-IV	3	4.5%
D-VI	1	1.5%
Total	**66**	**100%**

Source: 2018 Inventory & Data Form

2.4.1.3. Runway Lighting

The FAA recognizes three types of runway lighting: High, Medium, and Low Intensity Runway Lights referred to as HIRL, MIRL, and LIRL. Runway lighting is necessary for night-time operations and is present at 91 percent (60) of Colorado's system airports. Of the 66 primary runways in the Colorado airport system, 18 runways have HIRLs, 38 runways have MIRLs, one runway has LIRLs, and six runways do not have lights. Brush Municipal (7V5), Haxtun Municipal (17V) and Holly (K08) have non-standard lighting (NSTD).

Table 2.4 presents a summary of the individual CASP airport runway facilities as described in this section, organized alphabetically by associated city and divided between commercial service and GA. All tables in this chapter are organized in the same manner.

Table 2.4. Primary Runway Facilities

Associated City	Airport Name	FAA ID	ARC	Runway			
				Orientation	Length/Width	Surface	Lighting
Commercial Service							
Alamosa	San Luis Valley Regional	ALS	C-II	02/20	8,519' x 100'	Paved	HIRL
Aspen	Aspen-Pitkin County	ASE	D-III	15/33	8,006' x 100'	Paved	MIRL
Colorado Springs	Colorado Springs Municipal	COS	C-IV	17L/35R	13,501' x 150'	Paved	HIRL
Cortez	Cortez Municipal	CEZ	B-II	03/21	7,205' x 100'	Paved	MIRL
Denver*	Denver International	DEN	D-VI	17L/35R	12,000' x 150'	Paved	HIRL
Durango	Durango-La Plata County	DRO	D-IV	03/21	9,201' x 150'	Paved	HIRL
Eagle	Eagle County Regional	EGE	D-IV	07/25	9,000' x 150'	Paved	HIRL
Grand Junction	Grand Junction Regional	GJT	D-III	11/29	10,501' x 150'	Paved	HIRL
Gunnison	Gunnison-Crested Butte Regional	GUC	C-IV	06/24	9,400' x 150'	Paved	HIRL
Hayden	Yampa Valley	HDN	C-IV	10/28	10,000' x 150'	Paved	HIRL
Fort Collins/ Loveland	Northern Colorado Regional	FNL	C-III	15/33	8,500' x 100'	Paved	HIRL
Montrose	Montrose Regional	MTJ	D-IV	17/35	10,000' x 150'	Paved	HIRL
Pueblo	Pueblo Memorial	PUB	C-III	08R/26L	10,496' x 150'	Paved	HIRL
Telluride	Telluride Regional	TEX	C-III	09/27	7,111' x 100'	Paved	HIRL
General Aviation							
Akron	Colorado Plains Regional	AKO	B-II	11/29	7,001' x 100'	Paved	MIRL
Blanca	Blanca	05V	A-I	03/21	6,160' x 52'	Unpaved	None
Boulder	Boulder Municipal	BDU	B-II	08/26	4,100' x 75'	Paved	MIRL
Brush	Brush Municipal	7V5	B-I	07/25	4,300' x 60'	Paved	NSTD
Buena Vista	Central Colorado Regional	AEJ	B-II	15/33	8,303' x 75'	Paved	MIRL
Burlington	Kit Carson County	ITR	B-II	15/33	5,199' x 75'	Paved	MIRL
Canon City	Fremont County	1V6	B-II	11/29	5,399' x 75'	Paved	MIRL
Center	Leach	1V8	A-I	12/30	7,000' x 50'	Paved	LIRL
Colorado Springs	Meadow Lake	FLY	B-I	15/33	6,000' x 60'	Paved	MIRL

Associated City	Airport Name	FAA ID	ARC	Runway			
				Orientation	Length/Width	Surface	Lighting
Craig	Craig-Moffat	CAG	B-II	07/25	5,606' x 100'	Paved	MIRL
Creede	Mineral County Memorial	C24	B-I	07/25	6,880' x 60'	Paved	None
Del Norte	Astronaut Kent Rominger	RCV	B-II	06/24	6,051' x 75'	Paved	MIRL
Delta	Blake Field	AJZ	B-II	03/21	5,598' x 75'	Paved	MIRL
Denver	Centennial	APA	D-III	17L/35R	10,001' x 100'	Paved	MIRL
Denver	Rocky Mountain Metropolitan	BJC	C-II	12L/30R	9,000' x 100'	Paved	HIRL
Denver	Colorado Air and Space Port	CFO	C-II	08/26	8,000' x 100'	Paved	HIRL
Eads	Eads Municipal	9V7	A-I	17/35	3,860' x 60'	Paved	MIRL
Erie	Erie Municipal	EIK	B-I	15/33	4,700' x 60'	Paved	MIRL
Fort Morgan	Fort Morgan Municipal	FMM	B-II	14/32	5,731' x 75'	Paved	MIRL
Glenwood Springs	Glenwood Springs Municipal	GWS	B-II	14/32	3,305' x 50'	Paved	None
Granby	Granby-Grand County	GNB	B-II	09/27	5,001' x 75'	Paved	MIRL
Greeley	Greeley-Weld County	GXY	C-II	17/35	10,000' x 100'	Paved	MIRL
Haxtun	Haxtun Municipal	17V	A-I	08/26	3,860' x 40'	Paved	NSTD
Holly	Holly	K08	A-I	17/35	4,140' x 40'	Unpaved	NSTD
Holyoke	Holyoke	HEQ	B-II	14/32	5,000' x 75'	Paved	MIRL
Julesburg	Julesburg Municipal	7V8	B-I	13/31	4,100' x 60'	Paved	MIRL
Kremmling	Mc Elroy Airfield	20V	B-II	09/27	5,540' x 75'	Paved	MIRL
La Junta	La Junta Municipal	LHX	B-II	08/26	6,849' x 75'	Paved	MIRL
La Veta	Cuchara Valley	07V	A-I	06/24	5,798' x 60'	Paved	MIRL
Lamar	Lamar Municipal	LAA	B-II	18/36	6,304' x 100'	Paved	MIRL
Las Animas	Las Animas-Bent County	7V9	B-I	08/26	3,870' x 40'	Paved	HIRL
Leadville	Lake County	LXV	B-II	16/34	6,400' x 75'	Paved	MIRL
Limon	Limon Municipal	LIC	B-I	16/34	4,700' x 60'	Paved	MIRL
Longmont	Vance Brand	LMO	B-II	11/29	4,799' x 75'	Paved	MIRL
Meeker	Meeker/Coulter Field	EEO	B-II	03/21	6,503' x 100'	Paved	MIRL
Monte Vista	Monte Vista Municipal	MVI	B-I	02/20	5,901' x 60'	Paved	MIRL

Associated City	Airport Name	FAA ID	ARC	Runway			
				Orientation	Length/Width	Surface	Lighting
Nucla	Hopkins Field	AIB	B-II	05/23	5,210 x 75'	Paved	MIRL
Pagosa Springs	Stevens Field	PSO	C-II	01/19	8,100' x 100'	Paved	MIRL
Paonia	North Fork Valley	7V2	A-I	05/23	4,500' x 60'	Paved	HIRL
Rangely	Rangely	4V0	B-II	07/25	6,409' x 75'	Paved	MIRL
Rifle	Rifle Garfield County	RIL	D-II	08/26	7,000' x 100'	Paved	HIRL
Saguache	Saguache Municipal	04V	A-I	11/29	7,957' x 55'	Unpaved	None
Salida	Harriet Alexander Field	ANK	B-II	06/24	7,351' x 75'	Paved	MIRL
Springfield	Springfield Municipal	8V7	B-I	17/35	5,000' x 60'	Paved	MIRL
Steamboat Springs	Steamboat Springs	SBS	B-II	14/32	4,452' x 100'	Paved	HIRL
Sterling	Sterling Municipal	STK	B-II	15/33	5,201' x 75'	Paved	MIRL
Trinidad	Perry Stokes	TAD	B-II	03/21	5,500' x 75'	Paved	HIRL
Walden	Walden-Jackson County	33V	B-II	04/22	5,900' x 75'	Paved	MIRL
Walsenburg	Spanish Peaks Airfield	4V1	B-I	09/27	4,504' x 75'	Paved	None
Westcliffe	Silver West	C08	B-I	13/31	6,954' x 55'	Paved	None
Wray	Wray Municipal	2V5	B-II	17/35	5,399' x 75'	Paved	MIRL
Yuma	Yuma Municipal	2V6	B-II	16/34	4,200' x 75'	Paved	MIRL

**Note: While DEN's primary runway is Runway 17L/35R, its longest Runway (and longest Runway in the U.S.) is Runway 16R/34L which is 16,000 feet long.*

Source: 2018 Inventory & Data Form

2.4.2. Taxiways

Taxiways provide aircraft access to and from the runway. There are four types of taxiways reported at CASP airports listed in order of importance as they relate to the CASP. The types of taxiways are defined as follows:

- **Full-length parallel** - connects at both ends of the runway and typically includes a connector taxiway near the mid-field.
- **Partial-parallel** – typically connects from one end of the runway to a point near the center of the runway.
- **Connector** – taxiway that connects from the apron directly to the runway
- **Turnaround** – widened sections of pavement or a designed lane to turn aircraft around[7]

Of the 66 primary runways analyzed as part of the CASP, 29 (44 percent) have a full-length parallel, 17 (26 percent) have a partial parallel, 10 (15 percent) rely on connector taxiways, and seven (11 percent) utilize turnaround taxiways, and three airports do not have a taxiway. **Table 2.5** summarizes the primary taxiway facilities serving the primary runway at CASP airports.

Table 2.5. Taxiway Facilities

Associated City	Airport Name	FAA ID	Taxiway Type	Taxiway Width
			Commercial Service	
Alamosa	San Luis Valley Regional	ALS	Full Parallel	50
Aspen	Aspen-Pitkin County	ASE	Partial Parallel	50
Colorado Springs	Colorado Springs Municipal	COS	Full Parallel	75
Cortez	Cortez Municipal	CEZ	Full Parallel	50
Denver*	Denver International	DEN	Full Parallel	75
Durango	Durango-La Plata County	DRO	Full Parallel	75
Eagle	Eagle County Regional	EGE	Full Parallel	75
Grand Junction	Grand Junction Regional	GJT	Full Parallel	75
Gunnison	Gunnison-Crested Butte Regional	GUC	Full Parallel	75
Hayden	Yampa Valley	HDN	Full Parallel	75
Fort Collins/ Loveland	Northern Colorado Regional	FNL	Full Parallel	50
Montrose	Montrose Regional	MTJ	Full Parallel	75
Pueblo	Pueblo Memorial	PUB	Full Parallel	75
Telluride	Telluride Regional	TEX	Partial Parallel	50
			General Aviation	
Akron	Colorado Plains Regional	AKO	Partial Parallel	35
Blanca	Blanca	05V	None	N/A
Boulder	Boulder Municipal	BDU	Full Parallel	45

[7] For the purposes of this CASP, if an airport did not have a full-length or partial parallel taxiway, but had a connector and turnaround taxiway, the connector taxiway was reported as the primary taxiway type.

Associated City	Airport Name	FAA ID	Taxiway	
			Type	Width
Brush	Brush Municipal	7V5	Connector	40
Buena Vista	Central Colorado Regional	AEJ	Full Parallel	50
Burlington	Kit Carson County	ITR	Partial Parallel	35
Canon City	Fremont County	1V6	Full Parallel	35
Center	Leach	1V8	Connector	25
Colorado Springs	Meadow Lake	FLY	Full Parallel	25
Craig	Craig-Moffat	CAG	Turnaround	50
Creede	Mineral County Memorial	C24	Connector	25
Del Norte	Astronaut Kent Rominger	RCV	Partial Parallel	50
Delta	Blake Field	AJZ	Partial Parallel	35
Denver	Centennial	APA	Full Parallel	50
Denver	Rocky Mountain Metropolitan	BJC	Full Parallel	50
Denver	Colorado Air and Space Port	CFO	Full Parallel	50
Eads	Eads Municipal	9V7	Connector	20
Erie	Erie Municipal	EIK	Full Parallel	25
Fort Morgan	Fort Morgan Municipal	FMM	Turnaround	35
Glenwood Springs	Glenwood Springs Municipal	GWS	Full Parallel	20
Granby	Granby-Grand County	GNB	Partial Parallel	35
Greeley	Greeley-Weld County	GXY	Full Parallel	35
Haxtun	Haxtun Municipal	17V	None	N/A
Holly	Holly	K08	Turnaround	15
Holyoke	Holyoke	HEQ	Partial Parallel	35
Julesburg	Julesburg Municipal	7V8	Partial Parallel	15
Kremmling	Mc Elroy Airfield	20V	Turnaround	35
La Junta	La Junta Municipal	LHX	Full Parallel	75
La Veta	Cuchara Valley	07V	Connector	25
Lamar	Lamar Municipal	LAA	Full Parallel	35
Las Animas	Las Animas-Bent County	7V9	Turnaround	30
Leadville	Lake County	LXV	Partial Parallel	35
Limon	Limon Municipal	LIC	Partial Parallel	35
Longmont	Vance Brand	LMO	Full Parallel	35
Meeker	Meeker/Coulter Field	EEO	Partial Parallel	100
Monte Vista	Monte Vista Municipal	MVI	Partial Parallel	25
Nucla	Hopkins Field	AIB	Connector	50
Pagosa Springs	Stevens Field	PSO	Full Parallel	35
Paonia	North Fork Valley	7V2	Turnaround	25
Rangely	Rangely	4V0	Full Parallel	30
Rifle	Rifle Garfield County	RIL	Full Parallel	50
Saguache	Saguache Municipal	04V	None	N/A

Associated City	Airport Name	FAA ID	Taxiway	
			Type	Width
Salida	Harriet Alexander Field	ANK	Partial Parallel	35
Springfield	Springfield Municipal	8V7	Partial Parallel	30
Steamboat Springs	Steamboat Springs	SBS	Connector	60
Sterling	Sterling Municipal	STK	Full Parallel	35
Trinidad	Perry Stokes	TAD	Turnaround	50
Walden	Walden-Jackson County	33V	Connector	38
Walsenburg	Spanish Peaks Airfield	4V1	Connector	25
Westcliffe	Silver West	C08	Connector	30
Wray	Wray Municipal	2V5	Partial Parallel	35
Yuma	Yuma Municipal	2V6	Partial Parallel	35

**Note: Runway 16R/34L is served by Taxiways D, WA, and WB that are all 100 feet wide compared to the 75-foot wide taxiway that serves primary Runway 17L/35R.*

Sources: 2018 Inventory & Data Form; Google Earth, 2019

2.4.3. Approaches, NAVAIDs, and Visual Aids

The following section details runway approach types, navigational aids (NAVAIDs), visibility minimums, visual aids, and weather reporting facilities at CASP airports.

2.4.3.1. Approach Types

The series of procedures dictating an aircraft's route, direction, and rate of descent to a runway is known as an approach. The precision of the course guidance provided by NAVAIDS has improved to such a degree that it is possible to execute an approach within a few hundred feet of the ground.[8] There are four types of approaches including visual, non-precision, near-precision, and precision.[9]

Visual Approach

A visual approach procedure is conducted under Visual Meteorological Conditions (VMC), which are defined as a cloud ceiling greater than 1,000 feet above ground level (AGL) and visibility conditions equal to or greater than three statute miles. Under VMC conditions, pilots approach an airport using only visual standards or cues and do not rely on any instrumentation. There are 22 CASP airports that have only visual approach procedures to land. These airports cannot be used during times of inclement weather or reduced visibility.

Non-Precision Instrument Approach

Non-precision instrument approaches provide only lateral guidance. Non-precision instrument approaches are the most common instrument approach nationwide. Visibility minimums are dependent upon several conditions and vary at all airports. There are 29 CASP airports that have non-precision instrument approaches as their primary approach procedure.

[8] The Decision Altitude (DA) is the altitude at which the runway must be seen to initiate an approach. If the runway cannot be seen by the DA, the aircraft must not land.
[9] Information on types of approach is specific to the most precise available approach at the airport.

Near-Precision Approach

Near-precision approaches, also known as Approach Procedures with Vertical Guidance (APV) are a relatively recent outcome of the FAA's NextGen program. These approach procedures use GPS technology to provide Instrument Landing System (ILS)-like approach capability without the need for traditional ground-based ILS NAVAID equipment.[10] There are five CASP airports that accommodate near-precision approaches, however, all five airports also have ILS capability. As such, the airports with near-precision approaches will not be identified in **Table 2.6** as the airport's best available approach is a Precision approach.

Precision Approach

Precision instrument approaches provide both lateral and vertical guidance and have traditionally been supported by multiple ground based NAVAIDs collectively called an ILS.[11] An ILS includes a Localizer (providing lateral guidance), a Glideslope (providing vertical guidance), and an Approach Lighting System (ALS) (providing close-in visual guidance). There are 15 CASP airports that use precision approaches as their primary approach procedure. This approach provides the most guidance, allowing operation under most weather conditions, including those when pilots cannot see out the windshield and have to rely on instrumentation to land.

2.4.3.2. NAVAIDs

Navigational aids (NAVAIDs) were initially developed to provide directional information suitable for navigation from place-to-place. With the proliferation of NAVAIDs and improvements in technology over time, it became possible to use NAVAIDs to obtain information about a fixed physical location known as a fix. A fix is a radio-generated landmark. As a result, pilots can use a series of fixes to follow a specific course to align aircraft with the runway without the need to first circle and obtain visual confirmation of its physical location. A series of fixes can also be used to regulate an aircraft's rate of descent, with pilots descending to a lower altitude when reaching a certain point.

2.4.3.3. Visibility Minimums

Approach visibility minimums vary among airports and by approach types. Approach minimums are determined by individual airport and runway facilities, as well as topography and terrain characteristics of the approach and characteristics of the area surrounding the airport.

2.4.3.4. Controlling Obstructions

A controlling obstruction is the obstruction within the approach of a runway that determines the minimum approach slope to clear the obstruction. Maintaining the routes in and out of the airport (known as approaches) clear of natural or manmade features that could pose a physical obstruction to flight is critical. The FAA maintains records of approach slopes as well as the controlling obstruction (what it is, where it is located, how tall it is) in the FAA 5010 Master Record. Obstructions can include human-made infrastructure, such as buildings, transmission lines, and cell phone towers, as well as

[10] An ILS provides both lateral and vertical guidance to safely guide aircraft to the runway on an optimal and consistent approach path. If a runway has a precision approach, it has an ILS.
[11] Lateral guidance gives pilots frame of reference to the runway centerline so they stay on the right track. Vertical guidance gives pilots frame of reference to the runway touchdown zone so the aircraft doesn't touchdown before the runway or too far down the runway. Vertical guidance provides an optimal approach slope so the aircraft has enough distance to reduce speed once it lands on the runway.

natural features like hills, mountains, and vegetation. Airports should maintain clear approaches to all runway ends to the greatest extent feasible to optimize aircraft safety, especially during inclement weather conditions.

Of the 66 CASP airports, 39 (59 percent) have controlling obstructions. Of those, 22 have obstructions that negatively impact the standard approach slope of 20:1, 34:1, or 50:1 which are dependent upon the runway type. These are denoted with an asterisk on the approach slope of column of **Table 2.6.**

2.4.3.5. Approach Lighting System (ALS)

An ALS provides a means to safely transition from Instrument Flight Rules (IFR) to Visual Flight Rules (VFR) for landing. An ALS is a series of marker lights off the runway end to signal the aircraft toward the touchdown zone. Some systems include high-intensity sequenced flashing lights that appear to the pilot as a ball of light traveling toward the runway. Four types of ALS's were identified at CASP airports. Those include:

- MALSR – Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights
- MALSF – Medium-Intensity Approach Lighting System with Sequenced Flashing Lights
- ALSF2 – High-Intensity Approach Lighting System with Sequenced Flashing Lights
- ODALS – Omnidirectional Approach Lighting System

Of the 66 CASP airports, 16 (24 percent) have an ALS (12 commercial service, four GA).

2.4.3.6. Visual Glide Slope Indicators (VGSIs)

A Visual Glide Slope Indicator (VGSI) is a system of lights on the runway end that provides vertical guidance to the pilot on final approach to help determine if the aircraft is approaching too high, too low, or on course. VGSIs, such as Precision Approach Path Indicators (PAPIs) and Visual Approach Slope Indicators (VASIs) provide the basic means to transition from instrument flight to visual flight for landing. Operational requirements dictate the sophistication and configuration of the approach light system for a particular runway.

- **PAPIs** provide vertical-approach slope guidance to aircraft during approach to landing. PAPIs consist of a single row of either two or four lights normally installed on the left side of the runway. PAPIs have an effective visual range of approximately five miles during the day and up to 20 miles at night. PAPIs radiate a directional pattern of high-intensity red and white focused light beams that indicate whether the pilot is "on-path" if the pilot sees an equal number of white lights and red lights, "above path" if the pilot sees more white than red lights, or "below path" if the pilot sees more red than white lights.
- **VASIs** provide visual vertical approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high-intensity red and white focused light beams. These beams indicate if the pilot is "on path" (pilot sees red/white), "above path" (pilot sees white/white), and "below path" (pilot sees red/red). Some airports serving large aircraft have three-bar VASIs that provide two visual glide paths to the same runway.

54 of the 66 CASP airports (82 percent) are supported with VGSIs on at least one end of the primary runway.

2.4.3.7. Runway End Identifier Lights (REILs)

REILs provide rapid and positive identification of the end of the runway. The system consists of two synchronized, unidirectional flashing lights. The lights are positioned on each corner of the runway landing threshold facing the approach area and aimed at a 10 to 15-degree angle. The REIL provides three intensity settings with an approximate range of three miles in the daylight and twenty miles at night.

Forty of the 66 CASP airports are supported with REILs on at least one end of the primary runway. [12]

2.4.3.8. On-Site Weather Reporting

Surface weather observation stations are increasingly common at airports. These systems consist of various sensors, a processor, computer-generated voice subsystem, and transmitter to broadcast local, minute-by-minute weather data directly to the pilot. Prior to the initiation of an instrument approach, specific weather data must be obtained. When in operation, pilots can obtain weather data from the Air Traffic Control Tower (ATCT) at towered airports. At non-towered airports, information is primarily disseminated via automated weather reporting systems. The following describes surface weather observation systems at airports in Colorado:

- **Automated Weather Observing System (AWOS)** – An AWOS is a weather-data sensing, processing, and disseminating system designed to support weather forecast activities and aviation operations. The AWOS observes, archives, and transmits observations to pilots operating at or near the airport. An AWOS can include multiple types of systems based on the types of weather data needed.
- **Automated Surface Observing System (ASOS)** – With similar capabilities of an AWOS, the ASOS is a weather data sensing, processing, and disseminating system. ASOS are typically operated by the National Weather Service, Department of Defense and the FAA to inform the national weather system throughout the US, not just for aviation purposes.
- **Automated Unicom** – Provides completely automated weather, radio-check capability and airport advisory information. Availability should be published in the Airport/Facility Directory and approach charts[13].

Nineteen CASP airports have an ASOS, 32 airports have an AWOS, two have an Automated Unicom, and 13 do not have weather-reporting capabilities. **Table 2.6** summarizes the approaches, NAVAIDS, and visual aids available at CASP airports.

[12] Includes DEN and APA which are shown as not having REILs due to ALS's.
[13] Pilot/Controller Glossary and Airmen Information Manual, effective April 3, 2014.

Table 2.6. Visual Aids, NAVAIDs, and Approach Types at CASP Airports

Associated City	Airport Name	FAA ID	Runway End	Approach Type	Visibility Minimums	Controlling Obstruction (Marked [M]/ Lighted [L])	Approach Slope	Approach Lighting System	VGSI	REILs	Best Available Approach	Weather Reporting
Commercial Service												
Alamosa	San Luis Valley Regional	ALS	02 20	ILS; RNAV (GPS) RNAV (GPS)	200-1/2; 200-1/2 400-1	TREE	50:1 27:1*	MALSR	P4L V4L	N Y	Precision	ASOS
Aspen	Aspen-Pitkin County	ASE	15 33	LOC/DME; VOR/DME-C LOC/DME; VOR/DME-C	2400-1 3/4 2400-1 3/4	ROAD	34:1 40:1	MALSF	P4L	N Y	Non-Precision	ASOS
Colorado Springs	Colorado Springs Municipal	COS	17L 35R	ILS ILS	200-1/2 200-3/4		50:1 50:1	MALSR	P4L P4R	N Y	Precision	ASOS
Cortez	Cortez Municipal	CEZ	03 21	RNAV (GPS) RNAV (GPS); VOR	600-1 300-1; 800-1	TREES ROAD	30:1* 30:1*		P4L V4L	Y Y	Non-Precision	ASOS
Denver	Denver International	DEN	17L 35R	ILS; RNAV (RNP); RNAV (GPS) ILS; RNAV (RNP); RNAV (GPS)	200-1/2; 200-1/2; 200-1/2 200-1/2; 200-1/2; 200-1/2		50:1 50:1	MALSR ALSF2	P4L P4R	N N	Precision	ASOS
Durango	Durango-La Plata County	DRO	03 21	ILS; RNAV (GPS)	200-1/2; 200-1/2		50:1 50:1	MALSR	P4L V4L	N Y	Precision	ASOS
Eagle	Eagle County Regional	EGE	07 25	LDA LDA	1800-3 1800-3	TREE	19:1* 50:1	MALSR	P4R	Y N	Non-Precision	AWOS
Grand Junction	Grand Junction Regional	GJT	11 29	ILS; RNAV (RNP); RNAV (GPS) RNAV (GPS); LDA/DME	200-1/2; 400-1; 200-1/2 500-1; 600-1		50:1 50:1	MALSR	P4L V4L	N Y	Precision	AWOS
Gunnison	Gunnison-Crested Butte Regional	GUC	06 24	ILS; RNAV (RNP) RNAV (RNP)	1000-3; 500-1 1/4 400-1		50:1 34:1	MALSF	P4L P4L	N Y	Precision	AWOS
Hayden	Yampa Valley	HDN	10 28	ILS; RNAV(RNP); RNAV (GPS) RNAV (GPS)	200-3/4; 500-1 1/8; 200-3/4 400-1	PLINE (M)	50:1 34:1	MALSF	P4L P4L	N Y	Precision	AWOS
Fort Collins/ Loveland	Northern Colorado Regional	FNL	15 33	RNAV (GPS) ILS; RNAV (GPS)	300-1 200-1/2; 200-1/2		50:1 50:1	MALSR	P4L P4L	Y N	Precision	AWOS
Montrose	Montrose Regional	MTJ	17 35	ILS; RNAV (GPS); RNAV (GPS) RNAV (GPS)	200-1/2; 400-1/2; 200-1/2 700-1		50:1 50:1	MALSR	P4L P4L	N Y	Precision	ASOS
Pueblo	Pueblo Memorial	PUB	08R 26L	ILS; RNAV (GPS) ILS; RNAV (GPS); VOR	200-1/2; 200-1/2 200-3/4; 200-3/4; 400-1		50:1 50:1	MALSR	P4L P4L	N Y	Precision	ASOS
Telluride	Telluride Regional	TEX	09 27	RNAV (GPS); RNAV (GPS); LOC	2500-1 1/4; 1600-1 1/4; 2300 1 1/4		34:1 20:1		P4L P4L	Y Y	Non-Precision	AWOS
General Aviation												
Akron	Colorado Plains Regional	AKO	11 29	RNAV (GPS) RNAV (GPS); VOR	300-1 300-1; 500-1	ROAD	30:1 50:1		P2L P2L	Y Y	Non-Precision	ASOS
Blanca	Blanca	05V	03 21			ROAD ROAD	0:1* 0:1*			N N	Visual	
Boulder	Boulder Municipal	BDU	08 26			TREES	19:1* 50:1		V4L	N N	Visual	AWOS

Associated City	Airport Name	FAA ID	Runway End	Approach Type	Visibility Minimums	Controlling Obstruction (Marked [M]/ Lighted [L])	Approach Slope	Approach Lighting System	VGSI	REILs	Best Available Approach	Weather Reporting
Brush	Brush Municipal	7V5	07 25			TREE FENCE	18:1* 14:1*			N N	Visual	
Buena Vista	Central Colorado Regional	AEJ	15 33	RNAV (GPS)	1100-1 1/2	TREE	22:1 50:1		P2L P2L	N N	Non-Precision	AWOS
Burlington	Kit Carson County	ITR	15 33	RNAV (GPS); NDB LOC	300-1; 800-1 500-1		50:1 50:1		P4L P4L	Y Y	Non-Precision	ASOS
Canon City	Fremont County	1V6	11 29	RNAV (GPS)	300-3/4		50:1 50:1		P2L P2L	Y Y	Non-Precision	AWOS
Center	Leach	1V8	12 30			BLDG PLINE (M)	0:1* 0:1*		P2L	N N	Visual	
Colorado Springs	Meadow Lake	FLY	15 33			ROAD	17:1* 50:1		P2L P2L	N N	Visual	AWOS
Craig	Craig-Moffat	CAG	07 25	RNAV (GPS); VOR RNAV (GPS); VOR	700-1; 1100-1 1/4 600-1; 1700-1 1/4	PLINE TREE	37:1 22:1*		P4L	Y Y	Non-Precision	ASOS
Creede	Mineral County Memorial	C24	07 25				20:1 20:1			N N	Visual	
Del Norte	Astronaut Kent Rominger	RCV	06 24	RNAV (GPS)	300-1		50:1 50:1		P2L P2L	Y Y	Non-Precision	AWOS
Delta	Blake Field	AJZ	03 21	RNAV (GPS)	300-1		20:1 20:1		P2L P2L	N N	Non-Precision	AWOS
Denver	Centennial	APA	17L 35R	RNAV (GPS) ILS; RNAV (GPS)	200-3/4 200-1/2; 200-1/2	PLINE (L)	50:1 32:1*	MALSR	P4L P4L	N N	Precision	ASOS
Denver	Rocky Mountain Metropolitan	BJC	12L 30R	RNAV (GPS) ILS; RNAV (GPS); VOR/DME	400-1 200-1/2; 200-1/2; 300-1/2		50:1 50:1	MALSR	P4L P4L	Y N	Precision	AWOS
Denver	Colorado Air and Space Port	CFO	08 26	ILS; RNAV (GPS)	200-1/2; 200-1/2		50:1 50:1	MALSR	P2L P2L	Y N	Precision	AWOS
Eads	Eads Municipal	9V7	17 35			ROAD ROAD	11:1* 0:1*			N N	Visual	
Erie	Erie Municipal	EIK	15 33	VOR/DME or GPS-A VOR/DME or GPS-A	800-1 800-1	TREE HILL	32:1 22:1		P2L P2L	Y N	Non-Precision	AWOS
Fort Morgan	Fort Morgan Municipal	FMM	14 32	RNAV (GPS) RNAV (GPS)	300-1 300-1	ROAD	50:1 12:1*		P2L P2L	Y Y	Non-Precision	AWOS
Glenwood Springs	Glenwood Springs Municipal	GWS	14 32			TREES ROAD	5:1* 0:1*		P2L	N N	Visual	A-UNICOM
Granby	Granby-Grand County	GNB	09 27			FENCE	50:1 17:1*		P2L	Y Y	Visual	AWOS
Greeley	Greeley-Weld County	GXY	17 35	RNAV (GPS) ILS; RNAV (GPS)	200-3/4 200-3/4; 200-3/4		50:1 50:1		P2L P2L	Y Y	Precision	AWOS
Haxtun	Haxtun Municipal	17V	08 26			ROAD ROAD	0:1* 0:1*			N N	Visual	
Holly	Holly	K08	17 35			TREE FENCE	9:1* 19:1*			N N	Visual	

Associated City	Airport Name	FAA ID	Runway End	Approach Type	Visibility Minimums	Controlling Obstruction (Marked [M]/ Lighted [L])	Approach Slope	Approach Lighting System	VGSI	REILs	Best Available Approach	Weather Reporting
Holyoke	Holyoke	HEQ	14 32	RNAV (GPS) RNAV (GPS)	500-1 400-1	TREE	10:1* 50:1		P4L P4L	Y Y	Non-Precision	AWOS
Julesburg	Julesburg Municipal	7V8	13 31			TANK PLINE	12:1* 37:1			N N	Visual	
Kremmling	Mc Elroy Airfield	20V	09 27	RNAV (GPS)	700-2	FENCE HILL	20:1 27:1		P2L P2L	Y Y	Non-Precision	AWOS
La Junta	La Junta Municipal	LHX	08 26	RNAV (GPS) RNAV(GPS)	300-1 300-1	ROAD	40:1 50:1		V4L P2L	Y Y	Non-Precision	ASOS
La Veta	Cuchara Valley	07V	06 24			ROAD	50:1 0:1*			N N	Visual	
Lamar	Lamar Municipal	LAA	18 36	RNAV (GPS) RNAV (GPS); VOR/DME	300-1 300-1; 500-1	ROAD	44:1 20:1		V4L P4L	Y Y	Non-Precision	ASOS
Las Animas	Las Animas-Bent County	7V9	08 26			TREE ROAD	6:1 19:1			Y Y	Visual	
Leadville	Lake County	LXV	16 34	RNAV (GPS)	300-1		50:1 50:1		P2L P2L	N N	Non-Precision	ASOS
Limon	Limon Municipal	LIC	16 34			PLINE TREES	47:1 22:1		P2L P2L	N N	Visual	ASOS
Longmont	Vance Brand	LMO	11 29	RNAV (GPS)	300-1	TREE ROAD	20:1 20:1*		V2L V2L	N N	Non-Precision	AWOS
Meeker	Meeker/Coulter Field	EEO	03 21	RNAV (GPS)	1800-1 1/4		50:1 50:1		P2L	Y Y	Non-Precision	ASOS
Monte Vista	Monte Vista Municipal	MVI	02 20	RNAV (GPS)	300-1	PLINE	50:1 30:1		P2L P2L	N N	Non-Precision	
Nucla	Hopkins Field	AIB	05 23				50:1 50:1			N N	Visual	AWOS
Pagosa Springs	Stevens Field	PSO	01 19	RNAV (GPS)	600-1	TREES	28:1 50:1		P4L P4R	Y Y	Non-Precision	AWOS
Paonia	North Fork Valley	7V2	05 23				20:1 20:1		P2L P2L	N N	Visual	
Rangely	Rangely	4V0	07 25	RNAV (GPS) RNAV (GPS)	400-1 1200-1 1/4	ROAD	50:1 26:1		P2L	Y Y	Non-Precision	AWOS
Rifle	Rifle Garfield County	RIL	08 26	RNAV (RNP); RNAV (GPS) ILS; RNAV (RNP); RNAV (RNP); RNAV (GPS)	300-1; 1900-1 1/4 1300-4; 900-2 1/2; 500-1; 800-2 1/4		50:1 50:1	ODALS	P4L P4L	Y Y	Precision	ASOS
Saguache	Saguache Municipal	04V	11 29			ROAD	5:1* 20:1			N N	Visual	AWOS
Salida	Harriet Alexander Field	ANK	06 24			ROAD	20:1 50:1		P2L P2L	N N	Visual	AWOS
Springfield	Springfield Municipal	8V7	17 35	RNAV (GPS)	600-1		50:1 50:1		P2L P2L	N N	Non-Precision	A-UNICOM

Associated City	Airport Name	FAA ID	Runway End	Approach Type	Visibility Minimums	Controlling Obstruction (Marked [M]/ Lighted [L])	Approach Slope	Approach Lighting System	VGSI	REILs	Best Available Approach	Weather Reporting
Steamboat Springs	Steamboat Springs	SBS	04 32				50:1 50:1		P2L	N Y	Visual	AWOS
Sterling	Sterling Municipal	STK	15 33	RNAV (GPS) RNAV (GPS)	300-1 300-3/4	ROAD	26:1		P2L P2L	Y Y	Non-Precision	AWOS
Trinidad	Perry Stokes	TAD	03 21	RNAV (GPS) RNAV (GPS)	800-1 300-1	TREES	50:1 36:1		P2L P2L	Y Y	Non-Precision	ASOS
Walden	Walden-Jackson County	33V	04 22				50:1 50:1		P4L P4L	N N	Visual	AWOS
Walsenburg	Spanish Peaks Airfield	4V1	09 27	RNAV (GPS) RNAV (GPS)	300-1 300-1		20:1 20:1		P2L P2L	N N	Non-Precision	AWOS
Westcliffe	Silver West	C08	13 31			GND	50:1 0:1*			N N	Visual	
Wray	Wray Municipal	2V5	17 35	RNAV (GPS) RNAV (GPS)	200-1 300-1		50:1 50:1		P2L P2L	Y Y	Non-Precision	AWOS-3
Yuma	Yuma Municipal	2V6	16 34	RNAV (GPS) RNAV (GPS)	300-1 200-1	TREE OTHER	27:1 35:1		P2L P2L	Y Y	Non-Precision	AWOS-3

**Note: Airports with obstructions that negatively impact the standard approach slope are denoted with an asterisk.*

Sources: 2018 Inventory & Data Form; FAA 5010 Master Record; SkyVector, 2019

2.4.4. Crosswind Coverage

Wind conditions affect all airplanes in varying degrees. Generally, the smaller the airplane, the more it is affected by wind, particularly crosswinds. Crosswinds blow in a perpendicular direction to the runway orientation, making it difficult for aircraft to land and takeoff during these conditions. In FAA Advisory Circular (AC) 150/5300-13A, the FAA instructs that a runway orientation should provide at least 95 percent wind coverage for the aircraft that are forecasted to use the airport on a regular basis. If the wind coverage is less than 95 percent, development of a crosswind runway should be considered. The allowable crosswind component per Runway Design Code (RDC) is shown in **Table 2.7**.

Table 2.7. Allowable Crosswind Component per Runway Design Code (RDC)

RDC	Allowable Crosswind Component
A-I and B-I	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through D-III, D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI, E-I through E-VI	20 knots

Source: FAA AC 150/5300-13A, Change 1, Airport Design

Adequacy of primary runway crosswind coverage at each CASP airport is further analyzed in **Chapter 6. Current System Performance**.

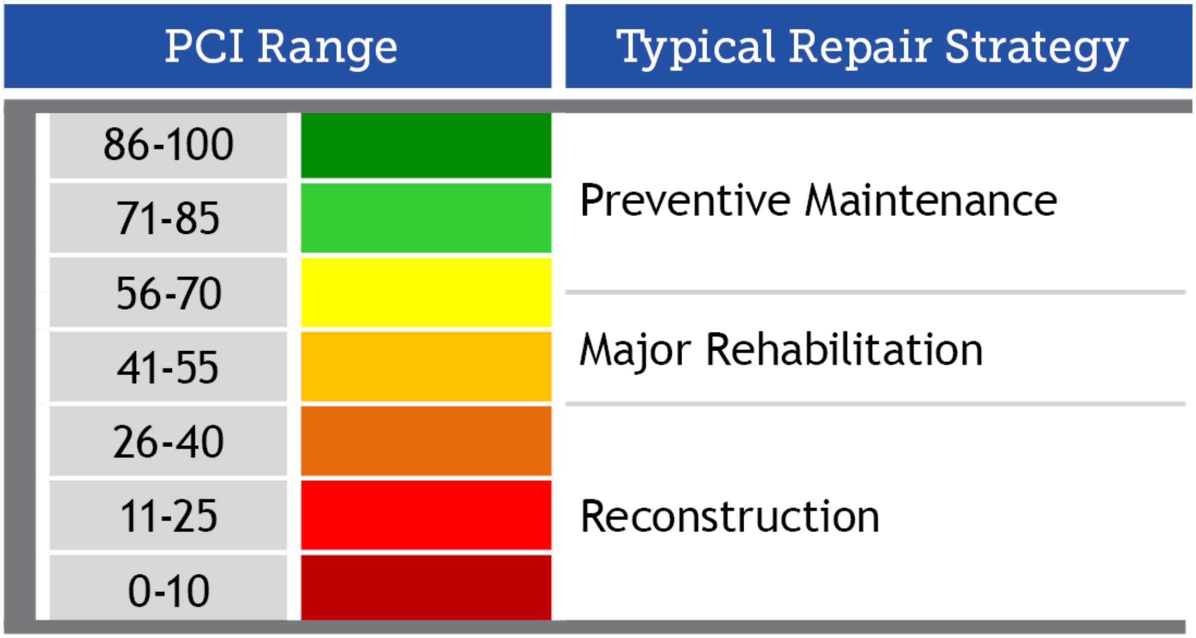
2.4.5. Pavement Maintenance Programs

Maintaining adequate pavement condition is critical to the safe and efficient operation of aircraft at airports. Pavement maintenance is often one of the costliest capital investments an airport makes. This section details the Pavement Condition Index (PCI) and associated pavement maintenance programs at CASP airports.

2.4.5.1. Runway Pavement Condition Index (PCI)

PCI is an industry standard for measuring and rating airport pavements so that maintenance and repair can be planned and implemented at the appropriate time during its lifecycle. PCI is expressed on a scale from 0 (failed pavement) to 100 (new pavement in perfect condition). According to CDOT PCI standards, pavement with a PCI of 63 to 100 is recommended to receive a preventative maintenance treatment, while a PCI between 62 and 41 is recommended for a major rehabilitation. PCI below 40 is recommended a full reconstruction. Since preventative maintenance is almost always significantly less costly than a major rehabilitation or reconstruction, the FAA and CDOT strongly encourage preventative maintenance when appropriate, rather than waiting until pavement is too deteriorated that it needs a more expensive rehabilitation. **Figure 2.3** depicts PCI ranges recognized by CDOT.

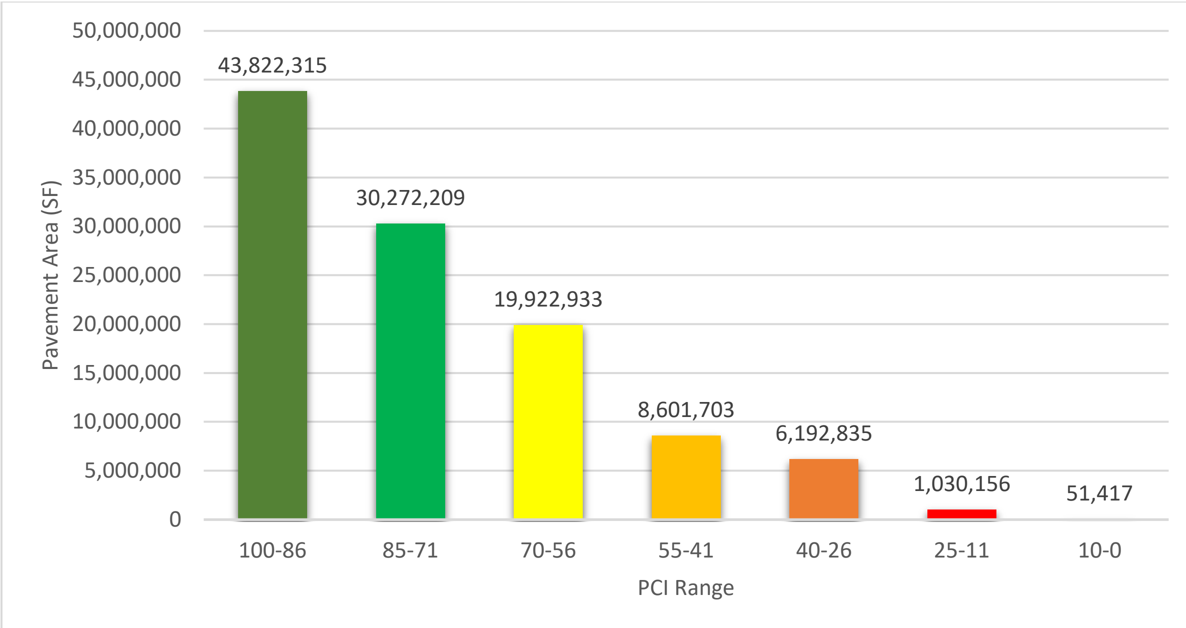
Figure 2.3. PCI Ranges



Source: CDOT Pavement Evaluation and Management, 2018

Approximately 110,000,000 square feet of runway, taxiway, apron, and helipad pavements were evaluated in CDOT Division of Aeronautics 2018 Airport Pavement Management System (APMS) Report. **Figure 2.4** shows a summary of the results, which indicate Colorado airfield pavements are generally in good condition with approximately two thirds of total pavements having PCIs over 70.

Figure 2.4. 2018 PCI Summary



Note: Summarizes all pavement (runways, taxiways, aprons, helipads). This chapter focuses on primary runways and taxiways.
Source: CDOT Pavement Evaluation and Management, 2018

While the 2018 CDOT APMS incudes all airfield pavements, the 2020 CASP focuses on the pavement condition of the primary runway and primary taxiway. Based on findings from CDOT's 2018 pavement database, 43 airports (65 percent) have primary runways with PCIs at 71 or above. Two airports (three percent) have primary runway PCIs within the range of 0-40 requiring rehabilitation or full reconstruction. Eighteen airports (27 percent) have primary runway PCIs between 41 and 70. Three airports are not paved and therefore do not have a PCI. Thirty-five CASP airports (53 percent) have primary taxiways with PCIs at 71 or above. Five (eight percent) airports have primary taxiway PCIs within a range requiring rehabilitation or full reconstruction. Twenty CASP airports (30 percent) have primary taxiways with PCIs between 41 and 70. Six airports do not have taxiways and therefore do not have an associated PCI. **Table 2.8** details primary runway and taxiway PCIs at CASP airports.

Table 2.8. CASP Airport PCIs

Associated City	Airport Name	FAA ID	Primary Runway PCI	Primary Taxiway PCI
Commercial Service				
Alamosa	San Luis Valley Regional	ALS	100	66
Aspen	Aspen-Pitkin County	ASE	72	65
Colorado Springs	Colorado Springs Municipal	COS	89	86
Cortez	Cortez Municipal	CEZ	83	78
Denver	Denver International	DEN	84	95
Durango	Durango-La Plata County	DRO	59	73
Eagle	Eagle County Regional	EGE	73	63

Associated City	Airport Name	FAA ID	Primary Runway PCI	Primary Taxiway PCI
Grand Junction	Grand Junction Regional	GJT	90	53
Gunnison	Gunnison-Crested Butte Regional	GUC	94	76
Hayden	Yampa Valley	HDN	99	81
Fort Collins/ Loveland	Northern Colorado Regional	FNL	93	63
Montrose	Montrose Regional	MTJ	93	66
Pueblo	Pueblo Memorial	PUB	66	76
Telluride	Telluride Regional	TEX	93	92
General Aviation				
Akron	Colorado Plains Regional	AKO	64	99
Blanca	Blanca	05V	N/A	N/A
Boulder	Boulder Municipal	BDU	61	69
Brush	Brush Municipal	7V5	51	33
Buena Vista	Central Colorado Regional	AEJ	84	62
Burlington	Kit Carson County	ITR	91	82
Canon City	Fremont County	1V6	76	73
Center	Leach	1V8	59	N/A
Colorado Springs	Meadow Lake	FLY	61	46
Craig	Craig-Moffat	CAG	51	58*
Creede	Mineral County Memorial	C24	58	65
Del Norte	Astronaut Kent Rominger	RCV	90	89
Delta	Blake Field	AJZ	100	83
Denver	Centennial	APA	100	100
Denver	Rocky Mountain Metropolitan	BJC	83	68
Denver	Colorado Air and Space Port	CFO	100	93
Eads	Eads Municipal	9V7	71	33
Erie	Erie Municipal	EIK	85	95
Fort Morgan	Fort Morgan Municipal	FMM	93	94
Glenwood Springs	Glenwood Springs Municipal	GWS	100	69
Granby	Granby-Grand County	GNB	87	97
Greeley	Greeley-Weld County	GXY	100	77
Haxtun	Haxtun Municipal	17V	68	N/A
Holly	Holly	K08	N/A	N/A
Holyoke	Holyoke	HEQ	69	90
Julesburg	Julesburg Municipal	7V8	81	65
Kremmling	Mc Elroy Airfield	20V	36	38
La Junta	La Junta Municipal	LHX	69	62
La Veta	Cuchara Valley	07V	32	19
Lamar	Lamar Municipal	LAA	99	78

Associated City	Airport Name	FAA ID	Primary Runway PCI	Primary Taxiway PCI
Las Animas	Las Animas-Bent County	7V9	56	59
Leadville	Lake County	LXV	57	41
Limon	Limon Municipal	LIC	91	84
Longmont	Vance Brand	LMO	97	72
Meeker	Meeker/Coulter Field	EEO	90	95
Monte Vista	Monte Vista Municipal	MVI	56	97
Nucla	Hopkins Field	AIB	100	100
Pagosa Springs	Stevens Field	PSO	74	97
Paonia	North Fork Valley	7V2	70	N/A
Rangely	Rangely	4V0	91	81
Rifle	Rifle Garfield County	RIL	81	86
Saguache	Saguache Municipal	04V	N/A	N/A
Salida	Harriet Alexander Field	ANK	95	81
Springfield	Springfield Municipal	8V7	90	15
Steamboat Springs	Steamboat Springs	SBS	73	100*
Sterling	Sterling Municipal	STK	79	93
Trinidad	Perry Stokes	TAD	100	70*
Walden	Walden-Jackson County	33V	60	60
Walsenburg	Spanish Peaks Airfield	4V1	87	100
Westcliffe	Silver West	C08	67	72
Wray	Wray Municipal	2V5	74	70
Yuma	Yuma Municipal	2V6	100	71

**Note: Craig-Moffat and Steamboat Springs have second connector taxiways with average PCI values of 56 and 60. Perry Stokes has second and third taxiways with average PCI values of 59 and 55.*

Sources: 2018 Inventory & Data Form; CDOT Pavement Evaluation and Management, 2018

2.5. Landside Facilities

Landside facilities examined in the 2020 CASP include terminal buildings (commercial service and GA), aircraft storage facilities (hangars, tie-downs, and aprons), dedicated snow removal equipment (SRE) storage buildings, the availability of fuel, Air Traffic Control Towers (ATCTs), and the availability of utilities. Each are explained in greater detail in this section.

2.5.1. Terminal Buildings

For this study, the availability of a terminal (whether a separate building or an area within another facility) was documented for GA and/or commercial passengers. Some terminal buildings had minimal services while larger GA and commercial service airports offered pilot's lounges and other amenities. Fifty-two of the 66 CASP airports offer a terminal building. The following sections provide terminal building information for both commercial service and GA terminals.

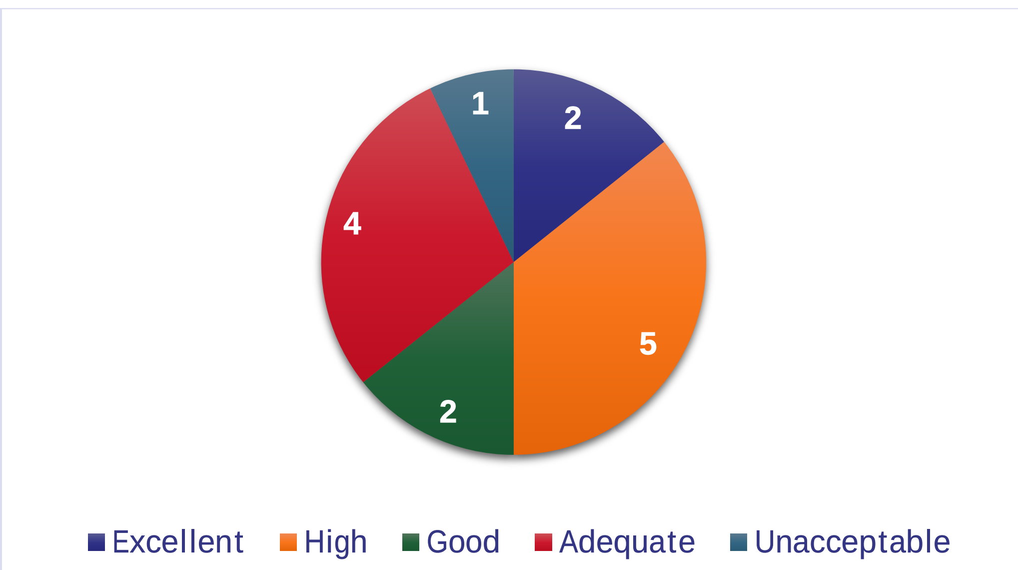
2.5.1.1. Commercial Service

Commercial service airport managers were asked a variety of questions pertaining to terminal building adequacy, including:

- Terminal building size (SF)
- Level of service (LOS)
  - Excellent – Condition is free flow; no delays; excellent level of service
  - High – Condition of stable flow; very few delays; high level of service
  - Good – Condition of stable flow; acceptable brief delays; good level of service
  - Adequate – Condition of unstable flow; condition acceptable for short periods of time; adequate level of comfort
  - Unacceptable – Condition of cross flows; system breakdown and unacceptable delays; unacceptable level of service
- Number of gates
- Gate expansion availability
- Types of delays/operational constraints
  - Insufficient ground transportation
  - Insufficient automobile parking
  - Insufficient terminal or gate space
  - Overcrowding of terminal apron space

Figure 2.5 summarizes the level of service documented by the 14 commercial service system airports. Sixty-four percent of commercial service airports were reported to provide at least a “good” level of service. Fifty percent of which providing high and excellent levels of service.

Figure 2.5. Level of Service



Source: 2018 Inventory & Data Form

Table 2.9 summarizes the responses from commercial service airport managers regarding their terminal buildings LOS and capacity issues and constraints.

Table 2.9. Commercial Service Terminal Buildings

Associated City	Airport Name	FAA ID	Terminal Size (SF)	LOS	Number of Gates	Gate Expansion Potential (number)	Delays/Constraints			
							Ground Trans-portation	Auto Parking	Terminal Space	Terminal Over - crowding
Alamosa	San Luis Valley Regional	ALS	8,400	High	0	0	No	No	No	No
Aspen	Aspen-Pitkin County	ASE	45,000	Adequate	8	0	No	Yes	Yes	Yes
Colorado Springs	Colorado Springs Municipal	COS	294,495	High	12	0	No	No	No	No
Cortez	Cortez Municipal	CEZ	3,500	Good	1	0	No	No	No	No
Denver*	Denver International	DEN	7,496,972	Excellent	112	200	No	No	No	No
Durango	Durango-La Plata County	DRO	37,617	Adequate	3	4	No	Yes	Yes	Yes
Eagle	Eagle County Regional	EGE	120,000	High	6	2	No	No	No	No
Grand Junction	Grand Junction Regional	GJT	76,000	High	6	8	No	No	No	No
Gunnison	Gunnison-Crested Butte Regional	GUC	34,800	Adequate	3	0	No	No	No	Yes
Hayden	Yampa Valley	HDN	71,695	Good	6	3	No	No	No	No
Fort Collins/ Loveland	Northern Colorado Regional	FNL	4,020	Good	1	0	No	No	Yes	Yes
Montrose	Montrose Regional	MTJ	35,000	Adequate	4	0	No	Yes	Yes	Yes
Pueblo	Pueblo Memorial	PUB	23,531	High	2	0	Yes	No	Yes	No
Telluride	Telluride Regional	TEX	20,000	Excellent	1	0	No	No	No	No

Notes: DEN's LOS will be enhanced to "Excellent" once the DEN Great Hall renovation efforts are complete. Also, the 112 gates are "Contact" gates. DEN also has 38 ground load positions. Lastly, DEN's gate expansion potential is fleet mix dependent.

Sources: 2018 Inventory & Data Form; Google Earth, 2018

2.5.1.2. General Aviation

Unlike commercial service airports, GA airport terminal buildings are less about the passenger experience and more tailored to the pilot experience. General aviation terminals typically require enough space for flight planning, resting between flights, food service, and other ancillary functions. Fifty-two CASP airports have a designated GA terminal building.

2.5.2. Aircraft Storage

Aircraft parking and storage were analyzed to provide a measure of landside capacity within CASP airports. An estimated 4,606 total of hangar spaces were identified as part of the inventory effort. This figure is comprised of conventional box hangar spaces, T-hangar spaces, and shade hangar spaces. An estimated 300 spaces are designated for transient aircraft storage. It is important to note that the figure listed is an approximation as the number of spaces available in each type of storage facility depends on the size of aircraft being accommodated.

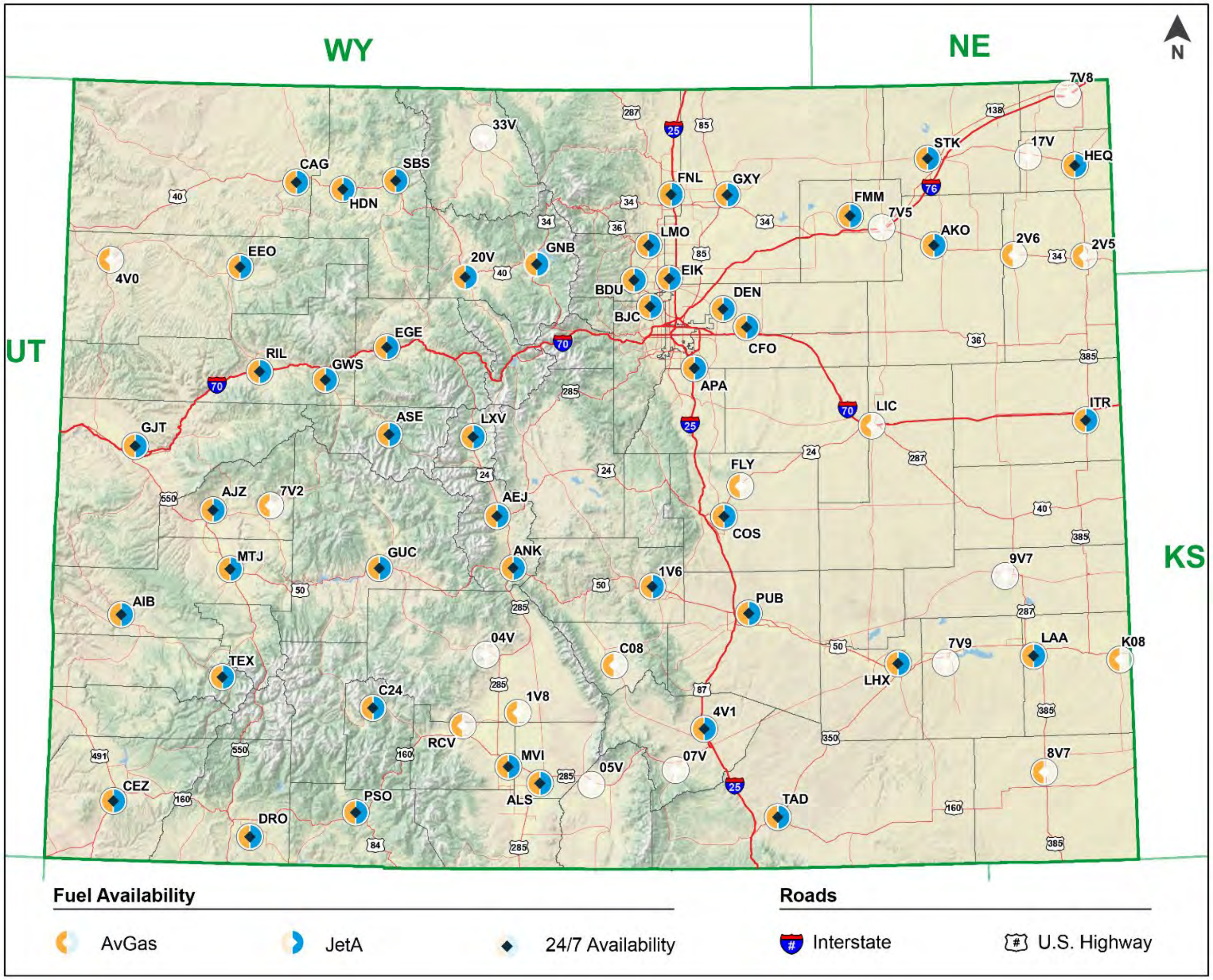
2.5.2.1. Dedicated Snow Removal Equipment (SRE) Buildings

Dedicated SRE storage buildings are critical at airports in Colorado because of the challenging winter weather conditions. Without dedicated storage, these costly machines and equipment can be subjected to extreme weather, be difficult to mobilize and require costly maintenance. Snow Removal Equipment is vital to keeping airports open during the winter season. Based on airport manager responses, 29 of the 66 CASP airports have dedicated SRE buildings.

2.5.3. Fuel

The availability of fuel at airports can be one of the most influential factors driving activity at airports. Fuel sales at GA airports are a substantial component of airport revenues. Fuel type availability is also an indicator of activity at an airport. Small, piston-engine aircraft rely on AvGas while turbine-engine aircraft rely on Jet A. A total of 57 CASP airports offer fuel (14 commercial service, 43 GA). Forty-six CASP airports offer both AvGas and Jet A. **Figure 2.6** depicts fuel availability at CASP airports.

Figure 2.6. CASP Fuel Availability



Source: 2018 Inventory & Data Form

2.5.4. Air Traffic Control Towers (ATCTs)

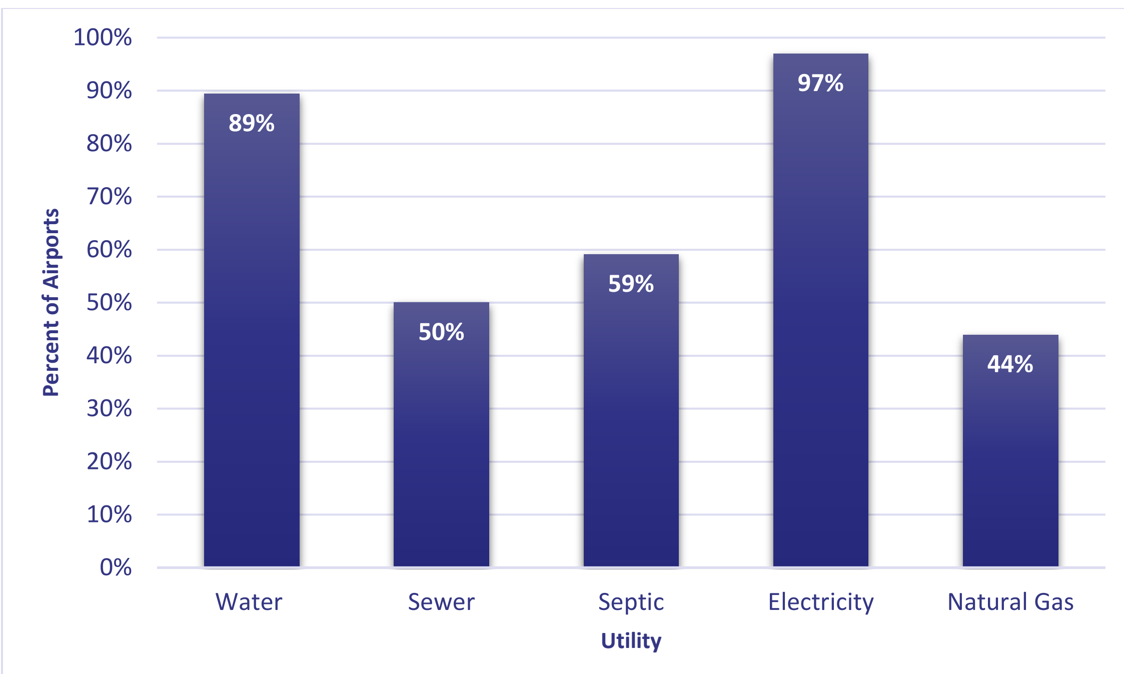
Air Traffic Control Towers (ATCTs) are indicators of high activity levels at an airport and are used to safely and efficiently guide aircraft within the airport environs.[14] These facilities are located at nine CASP airports; six commercial service (Aspen-Pitkin County, Colorado Springs Municipal, Denver International, Eagle County Regional, Grand Junction Regional, and Pueblo Memorial) and three GA airports (Centennial, Rocky Mountain Metropolitan, and Colorado Air and Space Port)[15].

2.5.5. Utilities

Utilities are a major capital investment at airports. They facilitate aviation and non-aviation development and are typically one of biggest factors in airport expansion, especially to businesses and tenants wanting to expand their footprint on the airport.

Airport managers were asked if utilities were present at the airport. Utilities include water, sewer, septic, electricity, and natural gas. **Figure 2.7** summarizes airport manager responses. A large percentage of CASP airports have water and electricity. Fifty-nine percent have septic, 50 percent have sewer, and 44 percent have natural gas.

Figure 2.7. Available Utilities at CASP Airports



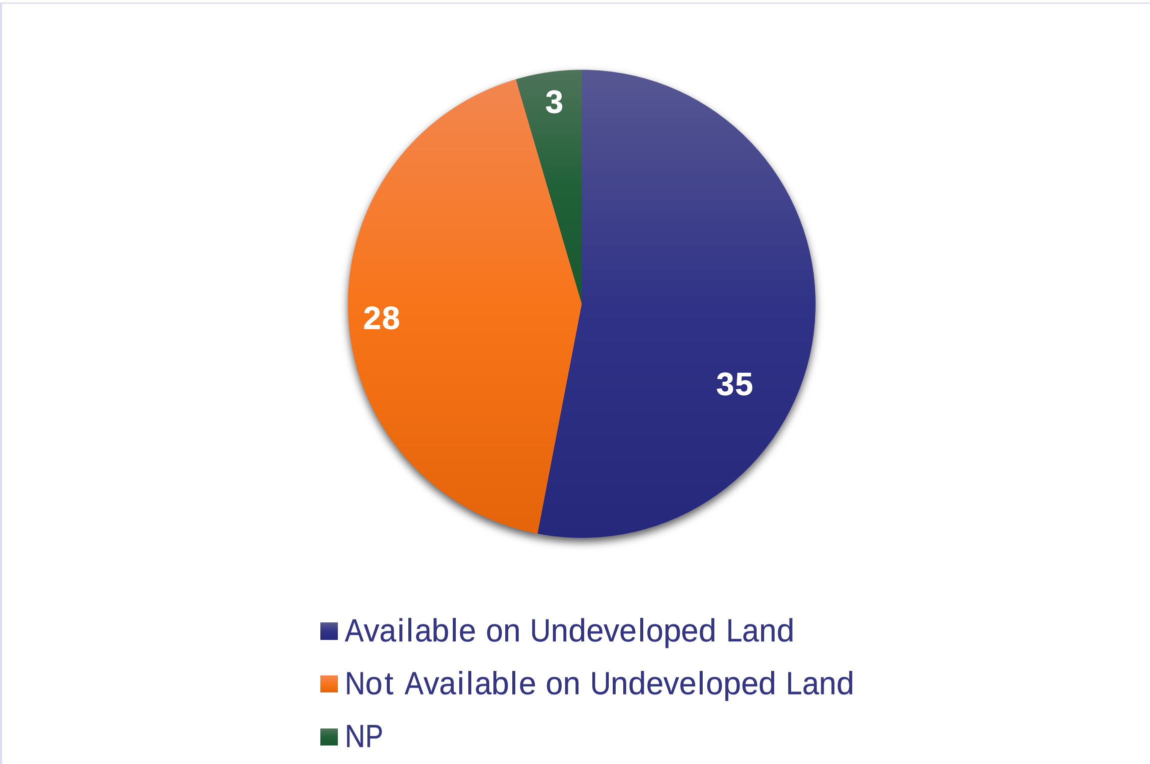
Source: 2018 Inventory & Data Form

Figure 2.8 summarizes the availability of utilities for undeveloped land on CASP airports based on airport manager responses. This is important for airports as the availability of utilities on undeveloped land suggests the land could be developed as soon as funding is available. If undeveloped land does not

[14] Air Route Traffic Control Centers (ARTCCs) safely and efficiently guide aircraft while en-route.
[15] Does not include the remote tower at Northern Colorado Regional (FNL)

have utility connections, utility design and construction would be a costly and time-consuming first step. Over 50 percent of airports responded as having utilities on undeveloped land.

Figure 2.8. Utilities



Source: 2018 Inventory & Data Form

Table 2.10 summarizes key landside facilities at CASP airports, including terminal buildings, aircraft storage, SRE, fuel, and ATCTs.

Table 2.10. Landside Facilities

Associated City	Airport Name	FAA ID	GA Terminal Building	Conventional Hangar Spaces		T-Hangar Spaces		Dedicated SRE	Fuel Availability	ATCT
				Based	Transient	Based	Transient			
Commercial Service										
Alamosa	San Luis Valley Regional	ALS	Yes	2	2	40	0	No	AvGas; Jet A	No
Aspen	Aspen-Pitkin County	ASE	Yes	0	5	0	0	Yes	AvGas; Jet A	Yes
Colorado Springs	Colorado Springs Municipal	COS	Yes	140	15	106	0	Yes	AvGas; Jet A	Yes
Cortez	Cortez Municipal	CEZ	Yes	30	3	0	0	Yes	AvGas; Jet A	No
Denver	Denver International	DEN	Yes	0	3	0	0	Yes	AvGas; Jet A	Yes
Durango	Durango-La Plata County	DRO	Yes	30	0	36	0	Yes	AvGas; Jet A	No
Eagle	Eagle County Regional	EGE	Yes	84	25	0	0	Yes	AvGas; Jet A	Yes
Grand Junction	Grand Junction Regional	GJT	Yes	80	80	40	40	No	AvGas; Jet A	Yes
Gunnison	Gunnison-Crested Butte Regional	GUC	Yes	0	0	10	0	Yes	AvGas; Jet A	No
Hayden	Yampa Valley	HDN	Yes	4	4	0	0	Yes	AvGas; Jet A	No
Fort Collins/ Loveland	Northern Colorado Regional	FNL	Yes	51	2	161	0	Yes	AvGas; Jet A	No
Montrose	Montrose Regional	MTJ	Yes	111	25	10	0	No	AvGas; Jet A	No
Pueblo	Pueblo Memorial	PUB	Yes	72	10	38	0	No	AvGas; Jet A	Yes
Telluride	Telluride Regional	TEX	Yes	15	1	0	0	No	AvGas; Jet A	No
General Aviation										
Akron	Colorado Plains Regional	AKO	Yes	4	1	8	0	No	AvGas; Jet A	No
Blanca	Blanca	05V	No	0	0	0	0	N/P	None	No

Associated City	Airport Name	FAA ID	GA Terminal Building	Conventional Hangar Spaces		T-Hangar Spaces		Dedicated SRE	Fuel Availability	ATCT
				Based	Transient	Based	Transient			
Boulder	Boulder Municipal	BDU	Yes	8	0	96	0	No	AvGas; Jet A	No
Brush	Brush Municipal	7V5	No	5	0	0	0	No	None	No
Buena Vista	Central Colorado Regional	AEJ	Yes	18	4	12	0	Yes	AvGas; Jet A	No
Burlington	Kit Carson County	ITR	Yes	4	2	14	0	Yes	AvGas; Jet A	No
Canon City	Fremont County	1V6	Yes	65	0	16	0	Yes	AvGas; Jet A	No
Center	Leach	1V8	Yes	0	0	14	0	No	AvGas	No
Colorado Springs	Meadow Lake	FLY	No	199	0	218	0	No	AvGas	No
Craig	Craig-Moffat	CAG	Yes	8	0	12	0	No	AvGas; Jet A	No
Creede	Mineral County Memorial	C24	Yes	10	0	0	0	No	AvGas; Jet A	No
Del Norte	Astronaut Kent Rominger	RCV	No	45	0	0	0	No	AvGas	No
Delta	Blake Field	AJZ	Yes	60	6	4	0	No	AvGas; Jet A	No
Denver	Centennial	APA	Yes	469	33	90	0	Yes	AvGas; Jet A	Yes
Denver	Rocky Mountain Metropolitan	BJC	Yes	87	0	112	0	No	AvGas; Jet A	Yes
Denver	Colorado Air and Space Port	CFO	Yes	139	2	152	0	Yes	AvGas; Jet A	Yes
Eads	Eads Municipal	9V7	No	9	0	0	0	No	None	No
Erie	Erie Municipal	EIK	Yes	190	2	24	0	No	AvGas; Jet A	No
Fort Morgan	Fort Morgan Municipal	FMM	Yes	13	0	14	0	No	AvGas; Jet A	No
Glenwood Springs	Glenwood Springs Municipal	GWS	No	50	0	14	0	No	AvGas; Jet A	No
Granby	Granby-Grand County	GNB	Yes	44	0	5	0	Yes	AvGas; Jet A	No
Greeley	Greeley-Weld County	GXY	Yes	98	8	120	0	Yes	AvGas; Jet A	No

Associated City	Airport Name	FAA ID	GA Terminal Building	Conventional Hangar Spaces		T-Hangar Spaces		Dedicated SRE	Fuel Availability	ATCT
				Based	Transient	Based	Transient			
Haxtun	Haxtun Municipal	17V	No	2	0	0	0	No	None	No
Holly	Holly	K08	No	0	0	5	0	No	AvGas	No
Holyoke	Holyoke	HEQ	Yes	12	0	5	0	No	AvGas; Jet A	No
Julesburg	Julesburg Municipal	7V8	No	5	0	0	0	No	None	No
Kremmling	Mc Elroy Airfield	20V	Yes	3	1	15	0	Yes	AvGas; Jet A	No
La Junta	La Junta Municipal	LHX	Yes	6	1	10	1	No	AvGas; Jet A	No
La Veta	Cuchara Valley	07V	No	0	0	2	0	No	None	No
Lamar	Lamar Municipal	LAA	Yes	14	2	20	0	Yes	AvGas; Jet A	No
Las Animas	Las Animas-Bent County	7V9	No	3	0	5	1	N/P	None	No
Leadville	Lake County	LXV	Yes	8	6	0	0	Yes	AvGas; Jet A	No
Limon	Limon Municipal	LIC	Yes	18	0	0	0	Yes	AvGas	No
Longmont	Vance Brand	LMO	Yes	154	2	117	0	No	AvGas; Jet A	No
Meeker	Meeker/Coulter Field	EEO	Yes	12	10	0	0	No	AvGas; Jet A	No
Monte Vista	Monte Vista Municipal	MVI	Yes	16	0	0	0	No	AvGas; Jet A	No
Nucla	Hopkins Field	AIB	Yes	12	0	0	0	No	AvGas; Jet A	No
Pagosa Springs	Stevens Field	PSO	Yes	54	0	0	0	Yes	AvGas; Jet A	No
Paonia	North Fork Valley	7V2	No	12	0	0	0	No	AvGas	No
Rangely	Rangely	4V0	Yes	12	0	0	0	Yes	AvGas	No
Rifle	Rifle Garfield County	RIL	Yes	7	5	18	0	Yes	AvGas; Jet A	No
Saguache	Saguache Municipal	04V	No	0	0	0	0	No	None	No
Salida	Harriet Alexander Field	ANK	Yes	20	1	8	0	Yes	AvGas; Jet A	No
Springfield	Springfield Municipal	8V7	Yes	18	0	0	0	Yes	AvGas	No
Steamboat Springs	Steamboat Springs	SBS	Yes	29	0	19	1	Yes	AvGas; Jet A	No

Associated City	Airport Name	FAA ID	GA Terminal Building	Conventional Hangar Spaces		T-Hangar Spaces		Dedicated SRE	Fuel Availability	ATCT
				Based	Transient	Based	Transient			
Sterling	Sterling Municipal	STK	Yes	16	2	18	0	No	AvGas; Jet A	No
Trinidad	Perry Stokes	TAD	Yes	3	0	19	0	No	AvGas; Jet A	No
Walden	Walden-Jackson County	33V	No	2	0	6	0	No	None	No
Walsenburg	Spanish Peaks Airfield	4V1	Yes	23	0	0	0	Yes	AvGas; Jet A	No
Westcliffe	Silver West	C08	Yes	12	0	0	0	Yes	AvGas	No
Wray	Wray Municipal	2V5	Yes	33	0	4	0	Yes	AvGas	No
Yuma	Yuma Municipal	2V6	Yes	8	0	8	0	No	None	No

Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

2.6. Airport Activity

One of the best ways to determine the level of activity at an airport is evaluate the number of based aircraft and annual aircraft operations. A based aircraft is generally defined as an aircraft that is stored at an airport for a majority (more than 6 months) of the year. An aircraft operation represents either a take-off or landing conducted by an aircraft. For example, a touch-and-go, which includes a take-off and landing, counts as two operations.

An accurate based aircraft recording can provide insight to the adequacy of aircraft storage and facility capacity at the airport. Similar to based aircraft, accurate annual aircraft operations data provide a detailed view of the airport's capacity and assists airport planners in determining future facility needs. It is important to note that accurate annual aircraft operations data are only available from airports that have an ATCT. Non-towered airports typically estimate the number of operations using different methods that do not always reflect the actual total number of annual operations.

The information presented below for based aircraft, annual operations, and commercial passenger enplanements primarily reflects data reported by airports. A subsequent chapter will compare airport-reported data to that from other sources.

2.6.1. Based Aircraft

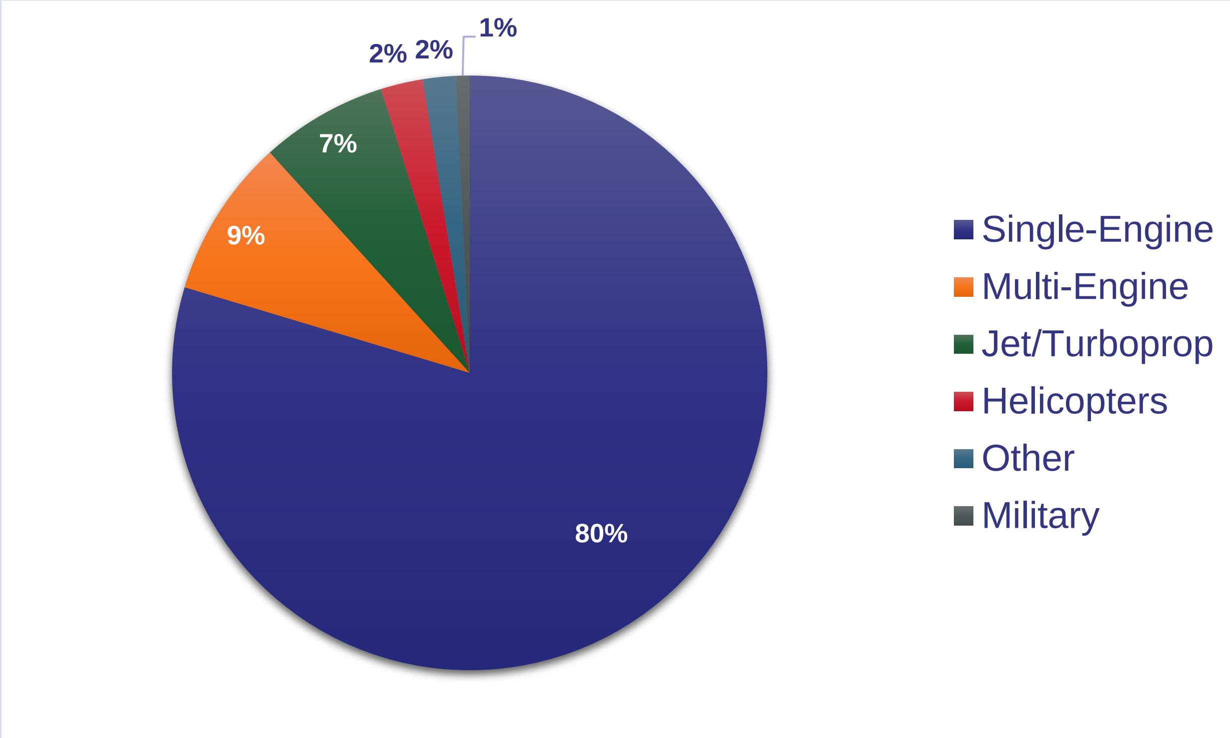
The total number of based aircraft by FAA category and class were identified for each system airport. **Table 2.11** and **Figure 2.9** summarize based aircraft at CASP airports by type. Since the 2011 CASP, the numbers for based single-engine aircraft have remained relatively flat while those for multi-engine have declined. The most significant increase being in the jet/turboprop (TP) category, a trend consistent with national averages per the FAA Aerospace Forecast 2019-2039.

Table 2.11. 2018 Statewide Based Aircraft by Type

Aircraft Type	2010		2018	
	Based Aircraft	Percent of Total	Based Aircraft	Percent of Total
Single-engine	4,091	78%	4,148	79.7%
Multi-engine	577	11%	450	8.6%
Jet/Turboprop	262	5%	359	6.9%
Helicopter	105	2%	119	2.3%
Other	52	1%	93	1.8%
Military	–	–	39	0.7%
Total	**5,245**	**100%**	**5,208**	**100%**

Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

Figure 2.9. 2018 Statewide Based Aircraft



Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

Table 2.12 (on the following pages) details the number of based aircraft by FAA category and class that were reported by airports. As shown, Centennial Airport (APA) reported the highest number of based aircraft (880) in 2018 while 13 airports recorded fewer than 10 based aircraft. Blanca and Saguache Municipal reported having no based aircraft.

Table 2.12. 2018 Based Aircraft by Type

Associated City	Airport Name	FAA ID	Single-engine	Multi-engine	Jet/TP	Heli-copters	Other	Military	Total
Commercial Service									
Alamosa	San Luis Valley Regional	ALS	33	4	0	1	0	0	38
Aspen	Aspen-Pitkin County	ASE	56	4	27	2	0	0	89
Colorado Springs	Colorado Springs Municipal	COS	151	25	25	4	0	26	231
Cortez	Cortez Municipal	CEZ	29	1	0	1	0	0	31
Denver	Denver International	DEN	0	0	0	0	2	0	2
Durango	Durango-La Plata County	DRO	49	7	4	1	2	0	63
Eagle	Eagle County Regional	EGE	48	2	22	2	4	13	91
Grand Junction	Grand Junction Regional	GJT	107	15	3	1	0	0	126
Gunnison	Gunnison-Crested Butte Regional	GUC	25	5	0	1	0	0	31
Hayden	Yampa Valley	HDN	4	8	0	0	0	0	12
Fort Collins/Loveland	Northern Colorado Regional	FNL	216	16	8	13	2	0	255
Montrose	Montrose Regional	MTJ	59	13	2	3	4	0	81
Pueblo	Pueblo Memorial	PUB	114	8	6	1	0	0	129
Telluride	Telluride Regional	TEX	30	2	10	2	0	0	44
General Aviation									
Akron	Colorado Plains Regional	AKO	12	1	0	1	0	0	14
Blanca	Blanca	05V	0	0	0	0	0	0	0
Boulder	Boulder Municipal	BDU	65	6	0	0	45	0	116
Brush	Brush Municipal	7V5	5	0	0	0	0	0	5
Buena Vista	Central Colorado Regional	AEJ	3	0	0	1	0	0	4
Burlington	Kit Carson County	ITR	20	0	3	0	0	0	23
Canon City	Fremont County	1V6	68	9	2	1	1	0	81
Center	Leach	1V8	4	0	0	0	0	0	4
Colorado Springs	Meadow Lake	FLY	422	12	4	5	7	0	450
Craig	Craig-Moffat	CAG	22	1	0	0	2	0	25

Associated City	Airport Name	FAA ID	Single-engine	Multi-engine	Jet/TP	Heli-copters	Other	Military	Total
Creede	Mineral County Memorial	C24	9	0	1	0	0	0	10
Del Norte	Astronaut Kent Rominger	RCV	37	1	1	0	0	0	39
Delta	Blake Field	AJZ	62	1	1	1	0	0	65
Denver	Centennial	APA	594	115	149	22	0	0	880
Denver	Rocky Mountain Metropolitan	BJC	300	55	50	20	0	0	425
Denver	Colorado Air and Space Port	CFO	369	44	12	6	3	0	434
Eads	Eads Municipal	9V7	9	0	0	0	0	0	9
Erie	Erie Municipal	EIK	194	7	0	5	1	0	207
Fort Morgan	Fort Morgan Municipal	FMM	30	2	0	0	0	0	32
Glenwood Springs	Glenwood Springs Municipal	GWS	59	3	0	7	0	0	69
Granby	Granby-Grand County	GNB	21	3	0	0	0	0	24
Greeley	Greeley-Weld County	GXY	167	24	4	6	0	0	201
Haxtun	Haxtun Municipal	17V	1	0	0	0	0	0	1
Holly	Holly	K08	1	0	0	0	0	0	1
Holyoke	Holyoke	HEQ	14	0	0	1	0	0	15
Julesburg	Julesburg Municipal	7V8	5	0	0	0	0	0	5
Kremmling	Mc Elroy Airfield	20V	21	0	0	1	0	0	22
La Junta	La Junta Municipal	LHX	22	0	0	1	0	0	23
La Veta	Cuchara Valley	07V	2	0	0	0	0	0	2
Lamar	Lamar Municipal	LAA	26	2	0	0	0	0	28
Las Animas	Las Animas-Bent County	7V9	11	0	0	0	0	0	11
Leadville	Lake County	LXV	5	0	0	0	0	0	5
Limon	Limon Municipal	LIC	21	1	0	0	0	0	22
Longmont	Vance Brand	LMO	258	20	4	4	8	0	294
Meeker	Meeker/Coulter Field	EEO	10	0	0	0	0	0	10
Monte Vista	Monte Vista Municipal	MVI	12	3	0	0	0	0	15
Nucla	Hopkins Field	AIB	10	0	0	0	0	0	10

Associated City	Airport Name	FAA ID	Single-engine	Multi-engine	Jet/TP	Heli-copters	Other	Military	Total
Pagosa Springs	Stevens Field	PSO	34	5	0	0	1	0	40
Paonia	North Fork Valley	7V2	20	0	0	0	0	0	20
Rangely	Rangely	4V0	17	2	0	0	0	0	19
Rifle	Rifle Garfield County	RIL	32	7	5	2	2	0	48
Saguache	Saguache Municipal	04V	0	0	0	0	0	0	0
Salida	Harriet Alexander Field	ANK	32	2	4	1	2	0	41
Springfield	Springfield Municipal	8V7	10	0	0	0	0	0	10
Steamboat Springs	Steamboat Springs	SBS	65	7	11	2	1	0	86
Sterling	Sterling Municipal	STK	28	3	0	0	2	0	33
Trinidad	Perry Stokes	TAD	19	0	0	0	1	0	20
Walden	Walden-Jackson County	33V	3	0	0	0	0	0	3
Walsenburg	Spanish Peaks Airfield	4V1	17	2	0	0	0	0	19
Westcliffe	Silver West	C08	21	0	1	0	2	0	24
Wray	Wray Municipal	2V5	26	1	0	0	0	0	27
Yuma	Yuma Municipal	2V6	12	1	0	0	1	0	14
		Total	**4,148**	**450**	**359**	**119**	**93**	**39**	**5,208**

Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

2.6.2. Operations

The number and types of aircraft operations measure the activity of an airport and are factors in determining the health of the system. Aircraft operations are typically recorded on an annual basis into several categories by the FAA:

- **Air Carrier** – transporting people or goods by an aircraft with a seating capacity of 60 or more or a maximum payload of 18,000 pounds
- **Air Taxi/Commuter** – on-demand service that makes short flights on smaller commercial planes with less than 60 seats and a maximum payload of 18,000 pounds
- **GA** – civil operations other than scheduled air service
- **Military** – aircraft operations performed by the military and armed forces

Airport inventory forms requested operations counts for commercial airlines, air cargo/freight, air taxi, military, local general aviation, and itinerant general aviation. It should be noted that the operations categories requested on the inventory form do not reflect an exact match with the FAA classifications listed above, as the study warrants separation into additional categories. For example, DEN's cargo activity is tracked primarily in terms of pounds of cargo, not by number of operations by the many carriers that provide cargo service, including scheduled passenger airlines that also serve cargo needs. The number of operations is recorded by the FAA ATCT according to the FAA's traditional categories (air carrier, air taxi, general aviation, and military) which are reflected in the tables below.

The 66 CASP airports reported a total of 2,557,641annual operations for 2018. **Table 2.13** summarizes the estimates of operations at system airports by type.

Table 2.13. 2018 Statewide Operations by Type

Operations Type	2010		2018	
	Number of Operations	Percent of Total	Number of Operations	Percent of Total
Commercial Service*	1,311,640	54%	750,493	29.3%
Cargo/Freight*	–	–	14,038	0.6%
GA-Local	–	–	864,497	33.8%
GA-Itinerant	–	–	655,910	25.6%
General Aviation	1,119,820	46%	1,520,407	59.4%
Military	–	–	272,703	10.7%
Total	**2,431,460**	**100%**	**2,557,641**	**100%**

Note: Commercial Service operations are the sum of air carrier and air taxi/commuter operations. DEN's cargo operations are included in the Commercial Service operations numbers.
Source: 2018 Inventory & Data Form

Table 2.14 details the number of annual aircraft operations, by type, that were reported by airports on their Inventory & Data Forms.

Table 2.14. 2018 Annual Operations by Type

Associated City	Airport Name	FAA ID	Air Carrier	Air Taxi/ Commuter	Cargo/ Freight	GA-Local	GA-Itinerant	Military	Total
Commercial Service									
Alamosa	San Luis Valley Regional	ALS	0	2,535	0	690	3,702	1,476	8,403
Aspen	Aspen-Pitkin County	ASE	11,590	9,514	0	4,260	15,715	159	41,238
Colorado Springs	Colorado Springs Municipal	COS	13,263	13,418	769	33,511	30,402	37,073	128,436
Cortez	Cortez Municipal	CEZ	2,400	130	0	4,400	4,400	0	11,330
Denver*	Denver International	DEN	462,276	137,027	0	0	3,979	121	603,403
Durango	Durango-La Plata County	DRO	7,909	302	2,190	12,179	12,179	552	35,311
Eagle	Eagle County Regional	EGE	4,380	8,153	0	24,787	0	4,962	42,282
Grand Junction	Grand Junction Regional	GJT	4,611	8,787	844	10,826	20,452	2,364	47,884
Gunnison	Gunnison-Crested Butte Regional	GUC	566	763	720	1,990	4,938	460	9,437
Hayden	Yampa Valley	HDN	3,578	0	1,653	2,273	4,042	17	11,563
Fort Collins/ Loveland	Northern Colorado Regional	FNL	46	3,500	3	35,150	56,000	200	94,899
Montrose	Montrose Regional	MTJ	6,850	200	0	14,300	15,100	2,000	38,450
Pueblo	Pueblo Memorial	PUB	600	1,839	1,839	5,729	15,832	167,712	193,551
Telluride	Telluride Regional	TEX	1,100	1,500	0	2,500	8,500	500	14,100
General Aviation									
Akron	Colorado Plains Regional	AKO	0	0	0	8,000	11,500	1,000	20,500
Blanca	Blanca	05V	0	0	0	770	230	0	1,000
Boulder	Boulder Municipal	BDU	0	0	0	43,305	7,277	0	50,582

Associated City	Airport Name	FAA ID	Air Carrier	Air Taxi/ Commuter	Cargo/ Freight	GA-Local	GA-Itinerant	Military	Total
Brush	Brush Municipal	7V5	0	31	0	1,170	260	0	1,461
Buena Vista	Central Colorado Regional	AEJ	0	0	0	1,760	2,800	140	4,700
Burlington	Kit Carson County	ITR	0	0	1	3,200	4,713	87	8,001
Canon City	Fremont County	1V6	0	0	520	16,100	335	255	17,210
Center	Leach	1V8	0	0	0	733	100	0	833
Colorado Springs	Meadow Lake	FLY	0	0	0	38,250	14,250	22,500	75,000
Craig	Craig-Moffat	CAG	0	0	0	9,000	3,000	0	12,000
Creede	Mineral County Memorial	C24	0	0	0	720	719	0	1,439
Del Norte	Astronaut Kent Rominger	RCV	0	0	0	4,380	1,095	0	5,475
Delta	Blake Field	AJZ	0	0	0	1,886	1,144	0	3,030
Denver	Centennial	APA	0	34,000	1,144	162,200	141,056	5,250	343,650
Denver	Rocky Mountain Metropolitan	BJC	535	5,902	0	94,138	67,480	4,002	172,057
Denver	Colorado Air and Space Port	CFO	0	36	0	54,096	34,381	3,087	91,600
Eads	Eads Municipal	9V7	0		0	825	425	0	1,250
Erie	Erie Municipal	EIK	0	0	0	31,200	22,800	60	54,060
Fort Morgan	Fort Morgan Municipal	FMM	0	800	0	5,000	4,000	200	10,000
Glenwood Springs	Glenwood Springs Municipal	GWS	0	20	0	17,600	4,400	0	22,020
Granby	Granby-Grand County	GNB	0	0	0	1,980	600	20	2,600
Greeley	Greeley-Weld County	GXY	0	0	0	74,500	47,500	0	122,000
Haxtun	Haxtun Municipal	17V	0	0	0	30	60	0	90
Holly	Holly	K08	0	0	0	740	345	0	1,085

Associated City	Airport Name	FAA ID	Air Carrier	Air Taxi/ Commuter	Cargo/ Freight	GA-Local	GA-Itinerant	Military	Total
Holyoke	Holyoke	HEQ	0	0	0	5,500	3,000	0	8,500
Julesburg	Julesburg Municipal	7V8	0	0	0	300	12	0	312
Kremmling	Mc Elroy Airfield	20V	0	72	0	522	1,206	0	1,800
La Junta	La Junta Municipal	LHX	0	0	75	766	8,141	438	9,420
La Veta	Cuchara Valley	07V	0	0	0	12	2	36	50
Lamar	Lamar Municipal	LAA	0	400	1,040	420	3,780	100	5,740
Las Animas	Las Animas-Bent County	7V9	0	0	0	624	208	24	856
Leadville	Lake County	LXV	0	0	0	1,800	1,000	2,000	4,800
Limon	Limon Municipal	LIC	0	0	0	2,965	2,965	70	6,000
Longmont	Vance Brand	LMO	0	0	0	52,076	22,606	420	75,102
Meeker	Meeker/Coulter Field	EEO	0	250	0	2,400	5,400	10	8,060
Monte Vista	Monte Vista Municipal	MVI	0	0	0	3,584	2,416	0	6,000
Nucla	Hopkins Field	AIB	0	0	0	1,600	2,700	0	4,300
Pagosa Springs	Stevens Field	PSO	0	500	0	3,500	1,750	120	5,870
Paonia	North Fork Valley	7V2	0	0	0	2,000	0	0	2,000
Rangely	Rangely	4V0	0	0	0	22,500	2,500	0	25,000
Rifle	Rifle Garfield County	RIL	0	0	2,300	4,760	7,292	6	14,358
Saguache	Saguache Municipal	04V	0	0	0	65	7	0	72
Salida	Harriet Alexander Field	ANK	0	200	300	3,100	2,950	400	6,950
Springfield	Springfield Municipal	8V7	0	0	0	4,500	75	0	4,575
Steamboat Springs	Steamboat Springs	SBS	0	800	40	500	7,753	82	9,175
Sterling	Sterling Municipal	STK	0	110	0	1,740	1,366	24	3,240
Trinidad	Perry Stokes	TAD	0	0	0	3,580	1,700	600	5,880
Walden	Walden-Jackson County	33V	0	0	0	439	658	6	1,103

Associated City	Airport Name	FAA ID	Air Carrier	Air Taxi/ Commuter	Cargo/ Freight	GA-Local	GA-Itinerant	Military	Total
Walsenburg	Spanish Peaks Airfield	4V1	0	0	0	104	1,274	14,040	15,418
Westcliffe	Silver West	C08	0	0	0	600	200	130	930
Wray	Wray Municipal	2V5	0	0	0	16,862	7,738	0	24,600
Yuma	Yuma Municipal	2V6	0	0	0	3,500	1,500	0	5,000
		Total	**519,704**	**230,789**	**13,438**	**864,497**	**655,910**	**272,703**	**2,557,041**

Note: DEN's cargo activity is tracked primarily in terms of pounds of cargo, not by number of operations by the many carriers that provide cargo service, including scheduled passenger airlines that also serve cargo needs. The number of operations is recorded by the FAA ATCT according to the FAA's traditional categories (air carrier, air taxi, general aviation, and military) which are reflected in this table.

Source: 2018 Inventory & Data Form

2.6.3. Passenger Enplanements

A passenger enplanement is defined as a revenue-paying passenger who boards an aircraft and departs to travel to a different airport destination. Passenger enplanements occur at airports that serve commercial airlines. There are different levels of commercial service provided at airports in the state, ranging from large commercial service airports that serve multiple airlines, such as Denver International (DEN), to small commercial service airports that serve a single airline such as San Luis Valley Regional (ALS) and Pueblo Memorial (PUB).

Table 2.15 documents the passenger enplanements as reported by airport managers at commercial service airports in 2018. The FAA TAF was used if passenger enplanements were not provided by the airport.

Table 2.15. 2018 Commercial Passenger Enplanements

Associated City	Airport Name	FAA ID	Enplanements
Alamosa	San Luis Valley Regional	ALS	6,798
Aspen	Aspen-Pitkin County	ASE	285,472
Colorado Springs	Colorado Springs Municipal	COS	883,776
Cortez	Cortez Municipal	CEZ	8,089
Denver	Denver International	DEN	30,849,992
Durango	Durango-La Plata County	DRO	189,771
Eagle	Eagle County Regional	EGE	174,369
Grand Junction	Grand Junction Regional	GJT	239,063
Gunnison	Gunnison-Crested Butte Regional	GUC	38,213
Hayden	Yampa Valley	HDN	103,410
Fort Collins/Loveland	Northern Colorado Regional	FNL	3,390
Montrose	Montrose Regional	MTJ	134,106
Pueblo	Pueblo Memorial	PUB	10,500
Telluride	Telluride Regional	TEX	19,109
		Total	**32,946,058**

Sources: 2018 Inventory & Data Form; FAA TAF, 2018

2.6.4. Types of Activity

In addition to traditional commercial service operations and business and leisure GA operations, a variety of other types of activity occur at CASP airports. This section describes some key aviation activities occurring at system airports, such as aerial firefighting and medical evacuation.

2.6.4.1. Aerial Wildland Firefighting

Aerial wildland firefighting is conducted by using fixed-wing aircraft and helicopters to combat wildfires from the air using water, foams, and gels. This also includes smokejumpers who parachute and firefighters who rappel from helicopters into wildfires. Many CASP airports support aerial wildland firefighting as an integral component of aviation throughout the state, region, and country. Wildfires emerge in unpredictable locations and response time is vital to reduce the spread. When many airports throughout a state or region can accommodate these aircraft, the time to extinguish can be drastically reduced. Based on responses to the Inventory & Data Form, 42 CASP airports indicated they supported aerial wildland firefighting in 2018 while two airports did not provide information.

In September 2019, a lightning strike started what would be known as the Decker Fire just two miles south of Salida. Over the next eight weeks, the Decker Fire grew to nearly 9,000 acres and skirted perilously close to Salida. Harriet Alexander Field (ANK) was used as the base for five helicopters and two fixed wing aircraft conducting an aerial firefighting assault on the fire. Fortunately, a snowstorm moved in near the end of October and helped firefighters contain the blaze without significant harm to the surrounding communities.

2.6.4.2. Aerospace Manufacturing, Technology, and Aircraft Flight Testing

Colorado has emerged as a national leader in aerospace manufacturing, aerospace technology, and flight testing. According to PricewaterhouseCoopers, Colorado ranked fifth among states for aerospace manufacturing in 2018. Large aerospace contracting companies such as Ball, Boeing, Lockheed Martin, Northrop Grumman, Raytheon, and the Department of Defense have a major foothold on- and off-airports within the state. Some of Colorado's small, general aviation airports are also experiencing this upsurge. For instance, Leadville-Lake County Airport, known for being the highest elevation airport in the U.S., facilitates various high-altitude flight-testing activities by aviation and aerospace companies from all over the globe. These enterprises evaluate new aircraft and aircrew flight equipment capabilities in the rarified conditions provided at this unique location. Activities such as these often generate additional demand and increased revenue at airports. Further, Pilatus Aircraft, a Swiss aircraft manufacturing company that specializes in the manufacturing of versatile prop and jet aircraft, has a U.S. headquarters in Broomfield, Colorado. The Swiss-made aircraft are assembled, polished, and delivered from Rocky Mountain Metropolitan Airport (BJC). These endeavors promote the continued advancement of the aviation industry as a whole by developing new technologies and exposing them to future generations of aviators. Of the 66 system airports inventoried, nine (14 percent) reported aerospace manufacturing activity at their facility, 13 (20 percent) reported aerospace technology activity, and 23 (35 percent) reported aircraft flight testing activity. 24 (36 percent) reported having at least one of the three activity types.

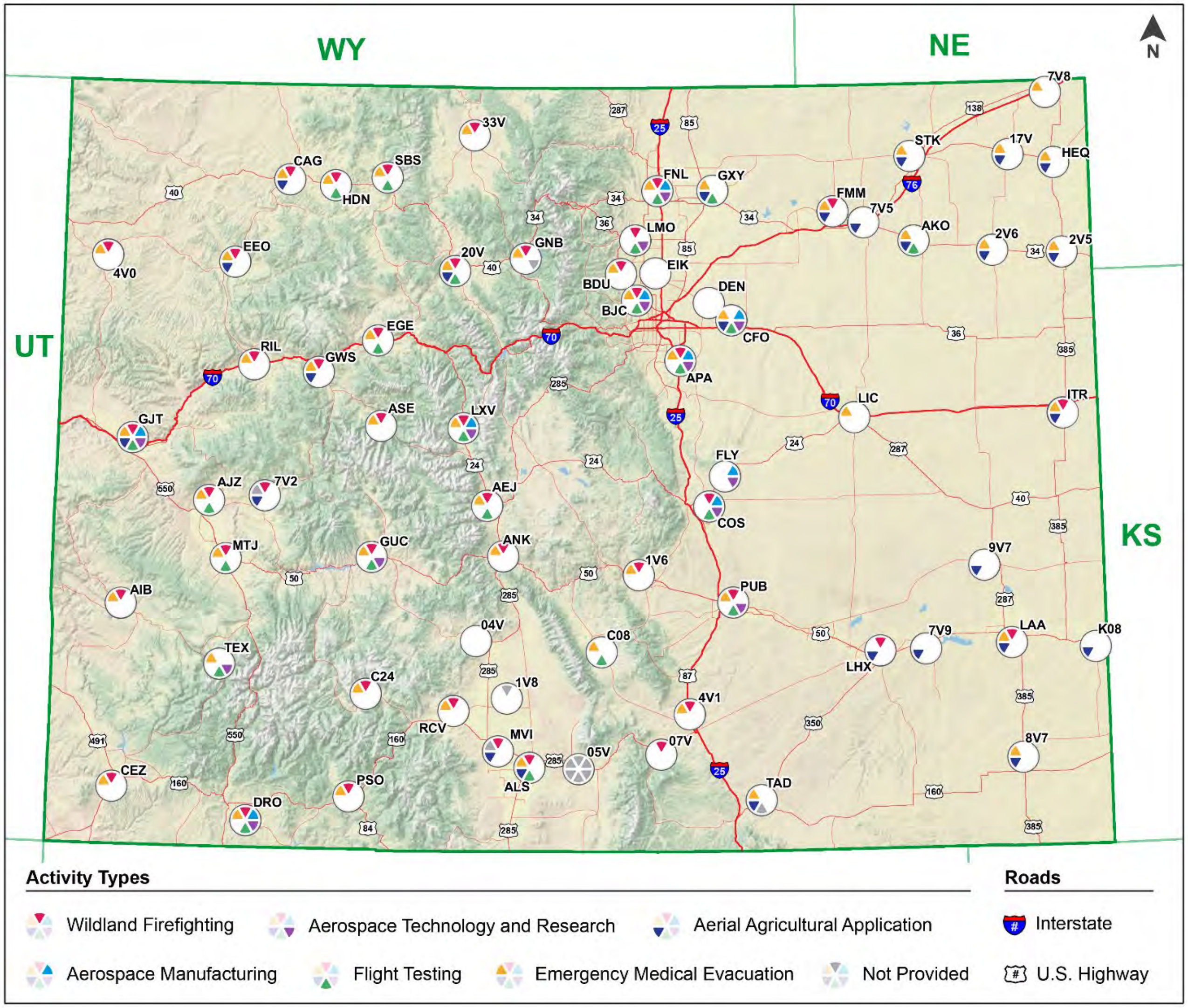
2.6.4.3. Aerial Agricultural Application

Aerial agricultural application provides a highly effective means of delivering crop protection products, produces maximum crop yields, and safeguards agricultural land from damage by surface application equipment. Aerial application is vital for producers to deliver quality and profitable quantities of their crops to the communities they support. Twenty-six system airports reported supporting agricultural application activities at their facilities.

2.6.4.4. Medical Emergency/Evacuation

Medical flights offer access to patients in need of specialized or emergency medical care, as well as transport of healthcare supplies and personnel to rural areas to provide care. These services are particularly important for residents of remote and/or Tribal communities without nearby access to medical facilities. Providing a network of airports to connect medical professionals and supplies with patients is one of the most important functions an aviation system can provide. Of the 66 CASP airports, 50 identified having medical emergency or evacuation activity at their facility. **Figure 2.10** and **Table 2.16** document the range of activities supported by CASP airports.

Figure 2.10. Activity Types at CASP Airports



Source: 2018 Inventory & Data Form

Table 2.16. Other Types of Aviation Activities Occurring at CASP Airports

Associated City	Airport Name	FAA ID	Aerial Wildland Firefighting	Aerospace Manufacturing	Aerospace Technology Research	Flight Testing	Aerial Agricultural Application	Emergency Medical Evacuation
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	✓			✓	✓	✓
Aspen	Aspen-Pitkin County	ASE	✓					✓
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓	✓		
Cortez	Cortez Municipal	CEZ	✓					✓
Denver	Denver International	DEN						
Durango	Durango-La Plata County	DRO	✓	✓	✓	✓		✓
Eagle	Eagle County Regional	EGE	✓			✓		✓
Grand Junction	Grand Junction Regional	GJT	✓	✓	✓	✓	✓	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓		✓	✓		✓
Hayden	Yampa Valley	HDN	✓			✓		✓
Fort Collins/ Loveland	Northern Colorado Regional	FNL	✓	✓	✓	✓		✓
Montrose	Montrose Regional	MTJ	✓			✓		✓
Pueblo	Pueblo Memorial	PUB	✓		✓	✓		✓
Telluride	Telluride Regional	TEX			✓	✓		✓
General Aviation								
Akron	Colorado Plains Regional	AKO				✓	✓	✓

Associated City	Airport Name	FAA ID	Aerial Wildland Firefighting	Aerospace Manufacturing	Aerospace Technology Research	Flight Testing	Aerial Agricultural Application	Emergency Medical Evacuation
Blanca	Blanca	05V	N/P	N/P	N/P	N/P	N/P	N/P
Boulder	Boulder Municipal	BDU	✓					✓
Brush	Brush Municipal	7V5					✓	
Buena Vista	Central Colorado Regional	AEJ	✓			✓		✓
Burlington	Kit Carson County	ITR	✓				✓	✓
Canon City	Fremont County	1V6	✓					✓
Center	Leach	1V8	N/P					
Colorado Springs	Meadow Lake	FLY		✓	✓			
Craig	Craig-Moffat	CAG	✓				✓	✓
Creede	Mineral County Memorial	C24	✓					✓
Del Norte	Astronaut Kent Rominger	RCV	✓					✓
Delta	Blake Field	AJZ	✓			✓		✓
Denver	Centennial	APA	✓	✓	✓	✓		✓
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	✓	✓		✓
Denver	Colorado Air and Space Port	CFO		✓	✓	✓	✓	✓
Eads	Eads Municipal	9V7					✓	
Erie	Erie Municipal	EIK						
Fort Morgan	Fort Morgan Municipal	FMM	✓				✓	✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓				✓	✓
Granby	Granby-Grand County	GNB	✓		N/P			✓

Associated City	Airport Name	FAA ID	Aerial Wildland Firefighting	Aerospace Manufacturing	Aerospace Technology Research	Flight Testing	Aerial Agricultural Application	Emergency Medical Evacuation
Greeley	Greeley-Weld County	GXY				✓	✓	✓
Haxtun	Haxtun Municipal	17V					✓	✓
Holly	Holly	K08					✓	
Holyoke	Holyoke	HEQ					✓	✓
Julesburg	Julesburg Municipal	7V8						✓
Kremmling	Mc Elroy Airfield	20V	✓			✓	✓	✓
La Junta	La Junta Municipal	LHX	✓				✓	
La Veta	Cuchara Valley	07V	✓					
Lamar	Lamar Municipal	LAA	✓				✓	✓
Las Animas	Las Animas-Bent County	7V9					✓	
Leadville	Lake County	LXV	✓	✓	✓	✓		✓
Limon	Limon Municipal	LIC						✓
Longmont	Vance Brand	LMO	✓		✓	✓		
Meeker	Meeker/Coulter Field	EEO	✓				✓	✓
Monte Vista	Monte Vista Municipal	MVI	✓				✓	N/P
Nucla	Hopkins Field	AIB	✓					✓
Pagosa Springs	Stevens Field	PSO	✓					✓
Paonia	North Fork Valley	7V2	✓				✓	N/P
Rangely	Rangely	4V0	✓					✓
Rifle	Rifle Garfield County	RIL	✓					✓
Saguache	Saguache Municipal	04V						
Salida	Harriet Alexander Field	ANK	✓					✓
Springfield	Springfield Municipal	8V7					✓	✓
Steamboat Springs	Steamboat Springs	SBS	✓			✓		✓

Associated City	Airport Name	FAA ID	Aerial Wildland Firefighting	Aerospace Manufacturing	Aerospace Technology Research	Flight Testing	Aerial Agricultural Application	Emergency Medical Evacuation
Sterling	Sterling Municipal	STK					✓	✓
Trinidad	Perry Stokes	TAD				N/P	✓	✓
Walden	Walden-Jackson County	33V	✓					✓
Walsenburg	Spanish Peaks Airfield	4V1	✓					✓
Westcliffe	Silver West	C08				✓		✓
Wray	Wray Municipal	2V5					✓	✓
Yuma	Yuma Municipal	2V6					✓	✓
		Total	**42**	**9**	**13**	**23**	**26**	**50**

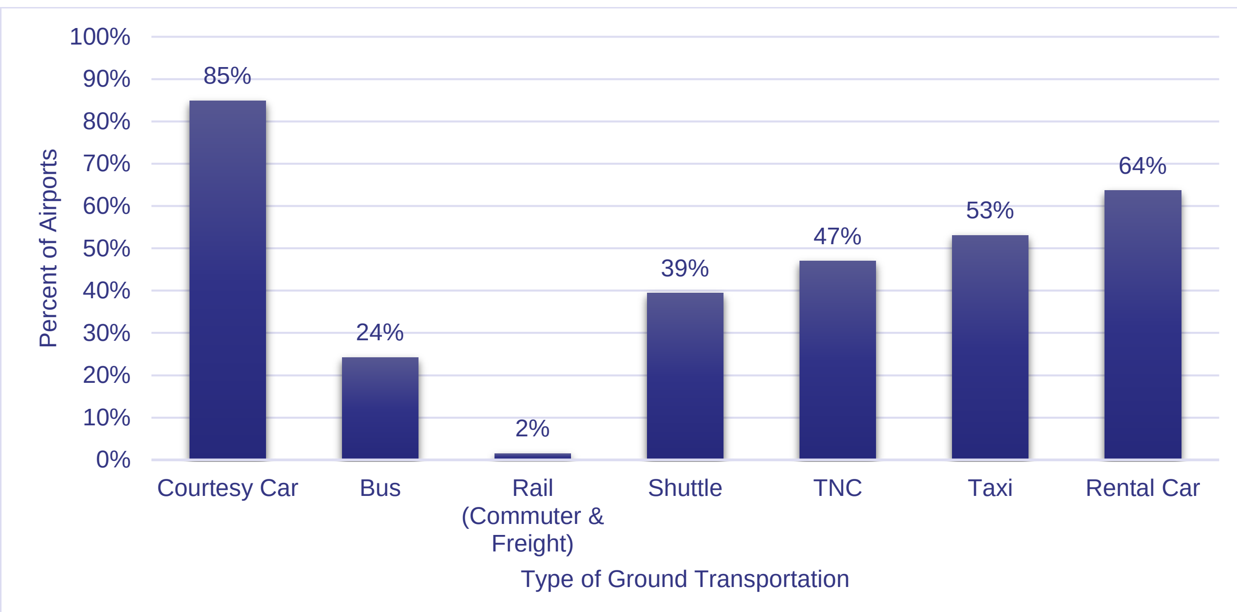
Source: 2018 Inventory & Data Form

2.7. Mobility and Access

Airports represent one of the multiple transportation modes that provide residents and visitors with access to all areas of Colorado. Connections between remote communities, large cities, and recreational areas are made even more accessible through aviation. The connectivity provided by airports is important, but other forms of transportation are required to tie the state together, both public and private, such that users can leave the airport environment and conduct activities outside of the airport. The ability of airports to promote intermodal connectivity is vital for many users of the state transportation system and communities in Colorado. Airports that offer transportation services such as courtesy cars, buses, rail (commuter & Freight), rental cars, shuttles, Transportation Network Companies (TNCs)[16], or connections to public transportation can attract more itinerant air traffic.[17]

CASP airports support a variety of ground transportation options, connecting passengers to their final destinations. Of the 66 CASP airports, 60 (91 percent) support at least one type of ground transportation option.[18] **Figure 2.11** and **Table 2.17** detail ground transportation availability by airport. A more detailed analysis of intermodal connectivity in Colorado is presented in **Chapter 3. Supplemental System Context**.

Figure 2.11. 2018 Statewide Ground Transportation Summary



Source: 2018 Inventory & Data Form

[16] Uber and/or Lyft
[17] An itinerant aircraft is one that lands at an airport having arrived from a different airport.
[18] A more detailed analysis of intermodal integration and airport access can be found in Chapter 3.

Table 2.17. Ground Transportation Options Provided by CASP Airports

Associated City	Airport Name	FAA ID	Rental Car	Courtesy Car	Bus	Rail *(Commuter & Freight)*	Shuttle	TNC	Taxi
Commercial Service									
Alamosa	San Luis Valley Regional	ALS	✓				✓	✓	✓
Aspen	Aspen-Pitkin County	ASE	✓	✓	✓		✓	✓	✓
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓		✓	✓	✓
Cortez	Cortez Municipal	CEZ	✓	✓			✓	✓	✓
Denver	Denver International	DEN	✓	✓	✓	✓	✓	✓	✓
Durango	Durango-La Plata County	DRO	✓	✓			✓	✓	✓
Eagle	Eagle County Regional	EGE	✓	✓	✓		✓	✓	✓
Grand Junction	Grand Junction Regional	GJT	✓	✓	✓		✓	✓	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	✓	✓				
Hayden	Yampa Valley	HDN	✓	✓			✓	✓	
Fort Collins/ Loveland	Northern Colorado Regional	FNL	✓	✓	✓		✓	✓	✓
Montrose	Montrose Regional	MTJ	✓	✓	✓		✓		
Pueblo	Pueblo Memorial	PUB	✓	✓	✓			✓	✓
Telluride	Telluride Regional	TEX	✓	✓			✓		✓
General Aviation									
Akron	Colorado Plains Regional	AKO	✓	✓			✓		
Blanca	Blanca	05V							
Boulder	Boulder Municipal	BDU	✓	✓	✓				
Brush	Brush Municipal	7V5		✓					
Buena Vista	Central Colorado Regional	AEJ	✓	✓			✓	✓	✓
Burlington	Kit Carson County	ITR	✓	✓				✓	
Canon City	Fremont County	1V6	✓	✓				✓	✓
Center	Leach	1V8							

Associated City	Airport Name	FAA ID	Rental Car	Courtesy Car	Bus	Rail *(Commuter & Freight)*	Shuttle	TNC	Taxi
Colorado Springs	Meadow Lake	FLY			✓			✓	✓
Craig	Craig-Moffat	CAG	✓	✓					✓
Creede	Mineral County Memorial	C24		✓				✓	
Del Norte	Astronaut Kent Rominger	RCV		✓					
Delta	Blake Field	AJZ	✓	✓				✓	✓
Denver	Centennial	APA	✓	✓			✓	✓	✓
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	✓		✓	✓	✓
Denver	Colorado Air and Space Port	CFO	✓	✓			✓	✓	✓
Eads	Eads Municipal	9V7		✓					
Erie	Erie Municipal	EIK	✓	✓				✓	✓
Fort Morgan	Fort Morgan Municipal	FMM	✓	✓					✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓	✓			✓	✓	✓
Granby	Granby-Grand County	GNB	✓	✓			✓	✓	✓
Greeley	Greeley-Weld County	GXY	✓	✓			✓	✓	✓
Haxtun	Haxtun Municipal	17V		✓	✓				
Holly	Holly	K08							
Holyoke	Holyoke	HEQ		✓					
Julesburg	Julesburg Municipal	7V8		✓					
Kremmling	Mc Elroy Airfield	20V	✓	✓	✓				✓
La Junta	La Junta Municipal	LHX	✓	✓				✓	
La Veta	Cuchara Valley	07V		✓					
Lamar	Lamar Municipal	LAA	✓	✓			✓		
Las Animas	Las Animas-Bent County	7V9					✓		
Leadville	Lake County	LXV		✓					✓
Limon	Limon Municipal	LIC		✓				✓	
Longmont	Vance Brand	LMO	✓	✓	✓		✓	✓	✓
Meeker	Meeker/Coulter Field	EEO	✓	✓					

Associated City	Airport Name	FAA ID	Rental Car	Courtesy Car	Bus	Rail *(Commuter & Freight)*	Shuttle	TNC	Taxi
Monte Vista	Monte Vista Municipal	MVI							
Nucla	Hopkins Field	AIB		✓					
Pagosa Springs	Stevens Field	PSO	✓	✓					✓
Paonia	North Fork Valley	7V2		✓					
Rangely	Rangely	4V0		✓					
Rifle	Rifle Garfield County	RIL	✓	✓				✓	✓
Saguache	Saguache Municipal	04V							
Salida	Harriet Alexander Field	ANK	✓	✓			✓		✓
Springfield	Springfield Municipal	8V7		✓				✓	
Steamboat Springs	Steamboat Springs	SBS	✓	✓			✓	✓	✓
Sterling	Sterling Municipal	STK	✓	✓	✓		✓	✓	✓
Trinidad	Perry Stokes	TAD	✓						✓
Walden	Walden-Jackson County	33V		✓					
Walsenburg	Spanish Peaks Airfield	4V1	✓	✓					✓
Westcliffe	Silver West	C08							
Wray	Wray Municipal	2V5	✓	✓					
Yuma	Yuma Municipal	2V6		✓					✓
		Total	**42**	**56**	**16**	**1**	**26**	**31**	**35**

Source: 2018 Inventory & Data Form

2.8. Airport Safety

Airports utilize a number of means to protect their facilities and aircraft operations. This section documents some of the ways in which airports promote the safety of pilots, passengers, and the public in an around the airport environs.

2.8.1. Wildlife Fencing

Airport fencing is often the first line of protection at airports and the types of fencing used varies widely based on the type of airport and need. Ideally, airports would have their entire perimeter fenced with 6-foot to 8-foot tall security fence with 1-foot of three-strand barbed wire; however, this can be very costly, especially when airports have a large land envelope and even more so when they are not eligible to receive federal funding. As such, some airports have only partial perimeter fencing around critical operational areas (e.g. runways) or have different fencing types, such as wildlife fencing which is typically ten feet tall, etc. to protect against wildlife entering the airport environs. Of the 66 CASP airports, 32 reported having full perimeter wildlife fencing around their airport, one reported having wildlife fencing around the runway area only, and two reported having wildlife fencing around the terminal apron area only.

2.8.2. Unmanned Aerial Systems (UAS)

The prevalence of UAS, sometimes referred to as drones, has rapidly increased in recent years. Until recently, drone operators were required to notify the airport operator and air traffic control (ATC) before flying within five miles of the airport. Newly announced airspace authorization now requires drone operators to obtain an airspace authorization prior to flying a drone in controlled airspace. The controlled, drone-designated airspace are referred to as “fixed sites” shown on Unmanned Aircraft Systems Facility Maps.[19] While there are few airports in the system that prohibit UAS operations at their facilities, they can still be a threat to traditional aircraft operations if not managed appropriately. To better understand where UAS activity is occurring at or near CASP airports and if those facilities have formal policies or processes to monitor, limit, or prohibit this activity, airport managers were asked if their airport has a formal process to receive, manage, and respond to on/near-airport UAS use requests (e.g., AirMap). Nineteen system airports reported having a formal process in place. More information on UAS is presented in **Chapter 4. Aviation Issues**.

2.8.3. Aircraft Rescue and Fire Fighting (ARFF)

Airports complying with Title 14 Code of Federal Regulations (CFR) Part 139[20] are required to have emergency response equipment (called Aircraft Rescue and Fire Fighting [ARFF] equipment) and personnel to respond to aircraft-in-distress emergencies. Sixteen airports in the CASP are Part 139 certified and have ARFF equipment and trained personnel to respond to incidents. The remaining 50 system airports are not required to have facilities or trained personnel on site, however it is beneficial to have local, off-airport first responders trained to respond to airport and aircraft incidents should it be necessary. Based on airport manager responses, 22 CASP airports have off-airport, ARFF-trained first

[19] https://www.faa.gov/news/updates/?newsId=93769

[20] A Part 139 airport serves scheduled air carrier operations in aircraft designed for between 10 and 30 passenger seats, or scheduled and unscheduled air carrier operations in aircraft with more than 30 seats.

responders.[21] It is important to note that if a Part 139 airport reported "No" to having local, ARFF-trained first responders, it does not mean that they do not meet the Part 139 on-airport ARFF requirement. **Table 2.18** summarizes airport safety indicators at CASP airports.

Table 2.18. Airport Safety Indicators at CASP Airports

Associated City	Airport Name	FAA ID	Wildlife Fencing	Managed UAS	ARFF-Trained
Commercial Service					
Alamosa	San Luis Valley Regional	ALS	Full Perimeter	Yes	Yes
Aspen	Aspen-Pitkin County	ASE	Full Perimeter	Yes	N/P
Colorado Springs	Colorado Springs Municipal	COS	Full Perimeter	Yes	Yes
Cortez	Cortez Municipal	CEZ	Full Perimeter	No	Yes
Denver	Denver International	DEN	Full Perimeter	Yes	No
Durango	Durango-La Plata County	DRO	N/P	Yes	N/P
Eagle	Eagle County Regional	EGE	Full Perimeter	No	Yes
Grand Junction	Grand Junction Regional	GJT	Terminal Apron Area	No	No
Gunnison	Gunnison-Crested Butte Regional	GUC	Full Perimeter	No	N/P
Hayden	Yampa Valley	HDN	Full Perimeter	Yes	Yes
Fort Collins/ Loveland	Northern Colorado Regional	FNL	Full Perimeter	Yes	Yes
Montrose	Montrose Regional	MTJ	Full Perimeter	No	Yes
Pueblo	Pueblo Memorial	PUB	Terminal Apron Area	No	N/P
Telluride	Telluride Regional	TEX	Full Perimeter	Yes	No
General Aviation					
Akron	Colorado Plains Regional	AKO	Partial Perimeter	No	Yes
Blanca	Blanca	05V	N/P	N/P	N/P
Boulder	Boulder Municipal	BDU	Full Perimeter	Yes	Yes
Brush	Brush Municipal	7V5	N/P	No	N/P
Buena Vista	Central Colorado Regional	AEJ	Full Perimeter	Yes	No
Burlington	Kit Carson County	ITR	N/P	No	Yes
Canon City	Fremont County	1V6	N/P	No	N/P
Center	Leach	1V8	N/P	No	No

[21] The 22 CASP airports with ARFF-trained first responders is a mix of both Part 139 and non-Part 139 airports.

Associated City	Airport Name	FAA ID	Wildlife Fencing	Managed UAS	ARFF-Trained
Colorado Springs	Meadow Lake	FLY	N/P	No	N/P
Craig	Craig-Moffat	CAG	Full Perimeter	No	N/P
Creede	Mineral County Memorial	C24	N/P	No	N/P
Del Norte	Astronaut Kent Rominger	RCV	N/P	Yes	N/P
Delta	Blake Field	AJZ	N/P	No	No
Denver	Centennial	APA	Full Perimeter	Yes	Yes
Denver	Rocky Mountain Metropolitan	BJC	Full Perimeter	Yes	Yes
Denver	Colorado Air and Space Port	CFO	N/P	Yes	Yes
Eads	Eads Municipal	9V7	N/P	No	No
Erie	Erie Municipal	EIK	N/P	Yes	Yes
Fort Morgan	Fort Morgan Municipal	FMM	N/P	No	N/P
Glenwood Springs	Glenwood Springs Municipal	GWS	N/P	No	NP
Granby	Granby-Grand County	GNB	Full Perimeter	No	N/P
Greeley	Greeley-Weld County	GXY	Full Perimeter	No	Yes
Haxtun	Haxtun Municipal	17V	N/P	No	N/P
Holly	Holly	K08	N/P	No	N/P
Holyoke	Holyoke	HEQ	N/P	No	N/P
Julesburg	Julesburg Municipal	7V8	N/P	No	N/P
Kremmling	Mc Elroy Airfield	20V	Full Perimeter	No	Yes
La Junta	La Junta Municipal	LHX	Full Perimeter	No	No
La Veta	Cuchara Valley	07V	N/P	No	N/P
Lamar	Lamar Municipal	LAA	Full Perimeter	No	N/P
Las Animas	Las Animas-Bent County	7V9	N/P	No	No
Leadville	Lake County	LXV	Full Perimeter	No	Yes
Limon	Limon Municipal	LIC	N/P	No	Yes
Longmont	Vance Brand	LMO	Partial Perimeter	Yes	No
Meeker	Meeker/Coulter Field	EEO	Full Perimeter	No	No
Monte Vista	Monte Vista Municipal	MVI	Runway Area	No	N/P
Nucla	Hopkins Field	AIB	N/P	No	N/P
Pagosa Springs	Stevens Field	PSO	Full Perimeter	Yes	Yes
Paonia	North Fork Valley	7V2	Full Perimeter	No	N/P
Rangely	Rangely	4V0	Full Perimeter	No	No
Rifle	Rifle Garfield County	RIL	Full Perimeter	Yes	Yes
Saguache	Saguache Municipal	04V	N/P	No	No

Associated City	Airport Name	FAA ID	Wildlife Fencing	Managed UAS	ARFF-Trained
Salida	Harriet Alexander Field	ANK	Full Perimeter	No	No
Springfield	Springfield Municipal	8V7	N/P	No	No
Steamboat Springs	Steamboat Springs	SBS	Full Perimeter	Yes	No
Sterling	Sterling Municipal	STK	Full Perimeter	No	Yes
Trinidad	Perry Stokes	TAD	Full Perimeter	No	N/P
Walden	Walden-Jackson County	33V	N/P	No	Yes
Walsenburg	Spanish Peaks Airfield	4V1	Full Perimeter	No	N/P
Westcliffe	Silver West	C08	N/P	N/P	N/P
Wray	Wray Municipal	2V5	N/P	No	No
Yuma	Yuma Municipal	2V6	N/P	No	N/P

Source: 2018 Inventory & Data Form

2.9. Airport Planning

Focused local airport planning is needed to reflect the market conditions and community environment of a specific airport. Airport master plans (MPs) and Airport Layout Plans (ALPs) lay the framework for planning at the local airport level. This section focuses on master plan and ALP availability at each CASP airport as well as the availability of a Wildlife Hazard Assessment (WHA) and Sustainability Plan.

2.9.1. Master Plan

Master plans are designed and developed to:

- Provide a graphic representation of the existing airport features, future airport development, and anticipated land use
- Establish a realistic schedule for implementation of the proposed development
- Identify a realistic financial plan to support the proposed development
- Validate the plan technically and procedurally through an investigation of concepts and alternatives on technical, economic, and environmental grounds
- Prepare and present a plan to the public that adequately addresses all relevant issues and satisfies local, state, and federal regulations
- Establish a framework for a continuous planning process

The FAA approves specific components of an MP as opposed to the entire document. These components consist of the forecasts of aviation demand, selection of critical aircraft, and the ALP.[22] It is from these elements that the FAA determines eligibility of Airport Improvement Program (AIP) funding for the proposed development referenced in the MP and shown on the ALP.

[22] ALPs are a graphic representation of the existing and planned development of the airport. ALPs are sometimes conducted as standalone documents and are updated as development is realized. ALPs are discussed in more detail in Chapter 6. Existing System Performance.

54 CASP airports (82 percent) reported having an airport master plan. One of the 54 airports who reported having a master plan did not know the date of which it was completed. Two airports did not answer the question.

2.9.2. Airport Layout Plan

The ALP is a critical planning tool that depicts both existing facilities and planned development for an airport. A current ALP is a prerequisite for issuance of an AIP grant for airport development. When an airport sponsor accepts AIP funding for airport development, they are obligated by a series of grant assurances, one of which is to "keep the ALP up-to-date at all times," making the process cyclical. ALPs are designed and developed to:

- Identify the boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes
- Depict the location and nature of existing and proposed airport facilities and structures
- Establish the location on the airport of existing and proposed non-aviation areas and improvements

60 CASP airports (91 percent) reported having an ALP. One of the airports who reported having an ALP did not know the year in which it was completed.

2.9.3. Wildlife Hazard Assessment

A Wildlife Hazard Assessment (WHA) is a study that inspects for evidence of animals in the airport environs and/or other wildlife concerns that may have developed specific to an airport. Part 139 airports are required by the FAA to conduct a WHA when any of the following events occur[23]:

- An air carrier aircraft experiences multiple bird strikes
- An air carrier aircraft experiences substantial damage from striking wildlife
- An air carrier aircraft experiences an engine ingestion of wildlife
- Wildlife of a large enough size, or in numbers that are capable of causing an accident, is observed to have access to any airport flight pattern or aircraft movement area

25 CASP airports reported having completed a WHA. Two airports noted having a WHA but did not know the date of which it was completed. It is important to note that airports only complete a WHA if they are required by the FAA or if the airport has a justified need for one.

2.9.4. Sustainability Plan

CDOT Division of Aeronautics developed a "first of its kind" sustainability project that was created to provide tools and guidance for airports in Colorado to develop sustainability plans for their own facilities. The mission of the program is to maintain and enhance the long-term viability of airports across Colorado in a way that properly balances economic, social, and environmental pressures while still meeting the operational needs of an airport. The sustainability plans generated through this project provide a host of benefits to the airports that include:

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[23] American Association of Airport Executives (AAAE) – *Airport Operations, Security, and Maintenance*, 2018.

- Increased competitiveness through lean operations
- Optimized use of airport assets
- Reduced environmental impacts of the facility
- Continued and increased support from the community
- Improved working environment for employees leading to higher productivity
- Reduced health and safety risks

11 system airports (17 percent) reported having a sustainability program, 6 of which are GA airports. Two CASP airports noted having a plan but did not indicate what year it was completed. Four of the 11 system airports that indicated having a sustainability program completed the plan via the Colorado Airport Sustainability Program. Those airports include Centennial, Rifle Garfield County, Fremont County, and Rocky Mountain Metropolitan. Other plans were created separately and are not necessarily consistent with this program.

Denver International (DEN) has initiated and completed several sustainability projects in the terminal and around the airfield. Since 2004, the airport has had a partnership with Excel Energy to install and maintain solar arrays on the terminal, parking facilities, and around the airfield. DEN also has two concrete and asphalt recycling yards that processed approximately 194,000 tons of paving materials in 2019, reducing the airport's need for new paving materials. Finally, DEN is developing holistic land management programs to help support native pollinator species on property, including one active hive of honey bees at Fire Station 35 on the south side of the airfield.

2.9.5. Local/Regional Comprehensive Plan

FAA guidance on state aviation system plans emphasizes coordination between multi-modal and regional planning partners to promote consideration of air travel and aviation facilities in other transportation and related plans. One way this is accomplished is through recognizing airports in local and/or regional comprehensive plans that typically consider land use, transportation, recreation, utilities, and housing within a municipality or region. Of the 66 CASP airports, 44 reported being included in either a local or regional comprehensive plan, and five did not provide information. **Table 2.19** details the availability and dates of planning documents at CASP airports.

Table 2.19. Availability of Airport Planning Documents for CASP Airports

Associated City	Airport Name	FAA ID	Master Plan	Airport Layout Plan	Wildlife Hazard Assessment	Sustainability Plan	Local/ Regional Comp. Plans
Commercial Service							
Alamosa	San Luis Valley Regional	ALS	2005	2007	Yes (date N/P)	N/P	Yes
Aspen	Aspen-Pitkin County	ASE	2012	2013	2012	2013	No
Colorado Springs	Colorado Springs Municipal	COS	2013	2013	2013	—	Yes
Cortez	Cortez Municipal	CEZ	2010	2010	2013	—	No
Denver	Denver International	DEN	2015	2015	2018	Yes (date N/P)	Yes
Durango	Durango-La Plata County	DRO	2015	2015	2013	—	Yes
Eagle	Eagle County Regional	EGE	2014	2014	—	2014	Yes
Grand Junction	Grand Junction Regional	GJT	2009	2009	2011	—	Yes
Gunnison	Gunnison-Crested Butte Regional	GUC	2015	2016	2005	—	N/P
Hayden	Yampa Valley	HDN	2015	2017	—	—	Yes
Fort Collins/ Loveland	Northern Colorado Regional	FNL	2007	2007	2018	—	Yes
Montrose	Montrose Regional	MTJ	2017	2018	2010	—	No
Pueblo	Pueblo Memorial	PUB	1992	2007	2012	—	No
Telluride	Telluride Regional	TEX	2016	2016	2014	—	Yes
General Aviation							
Akron	Colorado Plains Regional	AKO	2017	2005	—	—	No
Blanca	Blanca	05V	N/P	—	—	N/P	N/P
Boulder	Boulder Municipal	BDU	2006	2006	2015	—	Yes
Brush	Brush Municipal	7V5	2014	2014	—	—	Yes

Associated City	Airport Name	FAA ID	Master Plan	Airport Layout Plan	Wildlife Hazard Assessment	Sustainability Plan	Local/ Regional Comp. Plans
Buena Vista	Central Colorado Regional	AEJ	2016	2017	—	—	Yes
Burlington	Kit Carson County	ITR	2002	2002	—	—	N/P
Canon City	Fremont County	1V6	2013	2013	—	2016	No
Center	Leach	1V8	—	—	—	—	No
Colorado Springs	Meadow Lake	FLY	2018	2018	—	—	Yes
Craig	Craig-Moffat	CAG	2018	2018	—	—	No
Creede	Mineral County Memorial	C24	2005	2005	Yes (date N/P)	—	Yes
Del Norte	Astronaut Kent Rominger	RCV	2019	2018	—	—	Yes
Delta	Blake Field	AJZ	2015	2015	2015	—	Yes
Denver	Centennial	APA	2008	2009	2013	2017	Yes
Denver	Rocky Mountain Metropolitan	BJC	2011	2018	2012	2017	Yes
Denver	Colorado Air and Space Port	CFO	2018	2006	2013	—	Yes
Eads	Eads Municipal	9V7	1991	1991	—	—	No
Erie	Erie Municipal	EIK	2015	2016	2014	—	Yes
Fort Morgan	Fort Morgan Municipal	FMM	2016	2018	2018	—	Yes
Glenwood Springs	Glenwood Springs Municipal	GWS	—	1999	—	—	Yes
Granby	Granby-Grand County	GNB	2018	2018	—	—	Yes
Greeley	Greeley-Weld County	GXY	2015	2016	2015		Yes
Haxtun	Haxtun Municipal	17V	—	—	—	—	No
Holly	Holly	K08	—	—	—	—	No
Holyoke	Holyoke	HEQ	2017	2017	—	—	Yes
Julesburg	Julesburg Municipal	7V8	—	—	—	—	No
Kremmling	Mc Elroy Airfield	20V	2007	2015	—	—	Yes

Associated City	Airport Name	FAA ID	Master Plan	Airport Layout Plan	Wildlife Hazard Assessment	Sustainability Plan	Local/ Regional Comp. Plans
La Junta	La Junta Municipal	LHX	2008	2008	—	—	Yes
La Veta	Cuchara Valley	07V	—	1984	—	N/P	Yes
Lamar	Lamar Municipal	LAA	2004	2009	—	—	Yes
Las Animas	Las Animas-Bent County	7V9	—	2015	—	—	No
Leadville	Lake County	LXV	2015	2015	—	2014	Yes
Limon	Limon Municipal	LIC	2017	2017	—	—	Yes
Longmont	Vance Brand	LMO	2012	2018	2016	—	Yes
Meeker	Meeker/Coulter Field	EEO	2009	2009	—	—	Yes
Monte Vista	Monte Vista Municipal	MVI	2006	2017	N/P	—	Yes
Nucla	Hopkins Field	AIB	2017	2017	—	—	No
Pagosa Springs	Stevens Field	PSO	2008	2009	—	N/P	Yes
Paonia	North Fork Valley	7V2	N/P	Yes (date N/P)	N/P	N/P	N/P
Rangely	Rangely	4V0	2017	2017	—	—	N/P
Rifle	Rifle Garfield County	RIL	2015	2015	2018	2018	Yes
Saguache	Saguache Municipal	04V	—	2006	—	—	No
Salida	Harriet Alexander Field	ANK	2018	2018	—	—	Yes
Springfield	Springfield Municipal	8V7	Yes (date N/P)	2013	N/P	N/P	No
Steamboat Springs	Steamboat Springs	SBS	2008	2008	—	2016	Yes
Sterling	Sterling Municipal	STK	2004	2004	2016	—	Yes
Trinidad	Perry Stokes	TAD	2014	2014	—	—	Yes
Walden	Walden-Jackson County	33V	—	2007	—	—	Yes
Walsenburg	Spanish Peaks Airfield	4V1	2011	2011	—	—	Yes

Associated City	Airport Name	FAA ID	Master Plan	Airport Layout Plan	Wildlife Hazard Assessment	Sustainability Plan	Local/ Regional Comp. Plans
Westcliffe	Silver West	C08	—	—	N/P	N/P	Yes
Wray	Wray Municipal	2V5	2017	2016	2016	—	No
Yuma	Yuma Municipal	2V6	2018	2018	—	—	Yes

Sources: 2018 Inventory & Data Form; CDOT, 2018

2.10. Land Use Compatibility and Business Development

Protecting the land use and airspace around an airport is critical to an airport's long-term viability. In general, the objective of airport compatible land use is to promote development that is considered appropriate for airport environments and precludes land uses that pose a threat to safe aircraft operations and the safety of people and property on the ground. For the purposes of this study, a review of land use and ownership within each airport's FAR Part 77 Imaginary Surfaces and RPZs was conducted with airport sponsors. The following sections summarize the findings related to Part 77 surfaces, close-in obstructions, and land use controls.

2.10.1. Land Use Controls

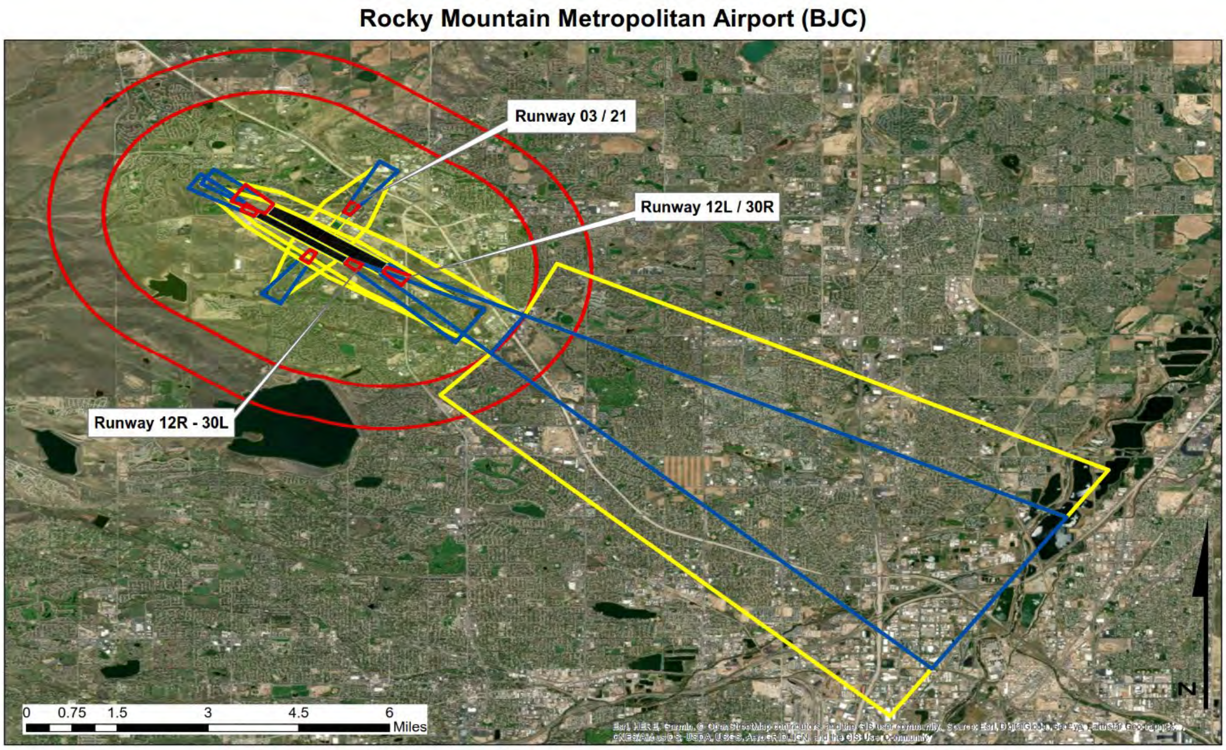
Effective airport land use controls are vital in precluding incompatible uses such as those that are noise sensitive (e.g. residential areas, schools), tall structures (e.g. phone lines, trees), visual obstructions (e.g. solar panel glare, mining operation dust), wildlife attractants (e.g. bodies of water, landfills), and high concentrations of people (e.g. hospitals, malls) near airports. When asked if their airport/community had adopted land use controls to protect the airport environment and operations, 41 CASP airports reported having land use controls while six airports did not provide information. Thirty-eight CASP airports reported having height controls while seven airports did not provide information. A total of 42 (64 percent) system airports have either land use or height controls, or both.

2.10.2. Part 77 Surfaces

FAR Part 77, "Objects Affecting Navigable Airspace" initially went into effect in 1965 to protect the nation's navigable airspace as a limited resource to be used efficiently and to ensure the safety of aircraft. Now called FAR Part 77 "Safe, Efficient Use and Preservation of the Navigable Airspace," the regulation lays out specific airspace dimensions as "imaginary surfaces" based on the design criteria of airports that should not be penetrated by objects or structures. These surfaces are designed to allow aircraft to operate within the airport's traffic pattern and along established approaches/routes into and out of the airport, clear of obstructions. As mentioned previously, a map of the Part 77 surfaces applicable to each airport were plotted on an airport aerial and were discussed with airport representatives during the site visits. This was done to educate representatives on protected airspace and identify areas of concern or areas for future land acquisition. Forty-two CASP airports reported having enforced Part 77 surfaces[24]. **Figure 2.12** includes a Part 77 airspace exhibit used during a site visit.

[24] For the purposes of this plan, "enforced" means that Part 77 surfaces are acknowledged and protected by local municipalities.

Figure 2.12. Part 77 Map Developed for the BJC Site Visit



Source: Kimley-Horn, 2018

2.10.3. Development Partnerships and Landside Business Parks

While an airport primarily facilitates air travel, it also operates as a business to generate revenues to pay for capital and operational expenses. Airports can develop partnerships with chambers of commerce, tourism bureaus, local/regional organizations and industries, governments, and/or recreational user groups to support and promote use of the facility as a community asset. These partnerships can result in the advancement of business opportunities, such as attracting new businesses to locate within a community. Thirty-four CASP airports reported having active development partnerships while three did not provide information. Fifteen CASP airports reported having landside business parks while two did not provide information. **Table 2.20** presents land use compatibility and business development efforts identified by CASP airports.

Table 2.20. Land Use Compatibility and Business Development at CASP Airports

Associated City	Airport Name	FAA ID	Primary Runway	Adopted Land Use Controls	Adopted Height Controls	Adopted Part 77	Active Development Partnerships	Landside Business Parks
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	02/20	N/P	N/P	N/P	Yes	No
Aspen	Aspen-Pitkin County	ASE	15/33	Yes	Yes	Yes	Yes	No
Colorado Springs	Colorado Springs Municipal	COS	17L/35R	Yes	Yes	Yes	Yes	Yes
Cortez	Cortez Municipal	CEZ	03/21	No	No	No	No	No
Denver	Denver International	DEN	17L/35R	Yes	Yes	Yes	Yes	Yes
Durango	Durango-La Plata County	DRO	03/21	Yes	Yes	Yes	No	No
Eagle	Eagle County Regional	EGE	07/25	Yes	Yes	N/P	Yes	No
Grand Junction	Grand Junction Regional	GJT	11/29	Yes	No	Yes	Yes	Yes
Gunnison	Gunnison-Crested Butte Regional	GUC	06/24	No	No	Yes	Yes	No
Hayden	Yampa Valley	HDN	10/28	Yes	Yes	Yes	Yes	No
Fort Collins/ Loveland	Northern Colorado Regional	FNL	15/33	Yes	Yes	Yes	Yes	No
Montrose	Montrose Regional	MTJ	17/35	Yes	Yes	Yes	Yes	No
Pueblo	Pueblo Memorial	PUB	08R/26L	No	No	Yes	Yes	No
Telluride	Telluride Regional	TEX	09/27	Yes	Yes	Yes	Yes	No
General Aviation								
Akron	Colorado Plains Regional	AKO	11/29	Yes	Yes	Yes	Yes	Yes
Blanca	Blanca	05V	03/21	N/P	N/P	N/P	N/P	N/P

Associated City	Airport Name	FAA ID	Primary Runway	Adopted Land Use Controls	Adopted Height Controls	Adopted Part 77	Active Development Partnerships	Landside Business Parks
Boulder	Boulder Municipal	BDU	08/26	Yes	Yes	N/P	No	No
Brush	Brush Municipal	7V5	07/25	N/P	N/P	N/P	No	No
Buena Vista	Central Colorado Regional	AEJ	15/33	Yes	Yes	Yes	Yes	Yes
Burlington	Kit Carson County	ITR	15/33	No	No	No	No	No
Canon City	Fremont County	1V6	11/29	Yes	Yes	Yes	No	Yes
Center	Leach	1V8	12/30	No	No	No	No	No
Colorado Springs	Meadow Lake	FLY	15/33	Yes	Yes	No	No	Yes
Craig	Craig-Moffat	CAG	07/25	No	No	Yes	Yes	No
Creede	Mineral County Memorial	C24	07/25	Yes	Yes	Yes	No	Yes
Del Norte	Astronaut Kent Rominger	RCV	06/24	Yes	Yes	Yes	Yes	No
Delta	Blake Field	AJZ	03/21	No	No	Yes	Yes	No
Denver	Centennial	APA	17L/35R	Yes	Yes	Yes	Yes	Yes
Denver	Rocky Mountain Metropolitan	BJC	12L/30R	Yes	Yes	Yes	Yes	Yes
Denver	Colorado Air and Space Port	CFO	08/26	Yes	Yes	Yes	Yes	No
Eads	Eads Municipal	9V7	17/35	No	No	No	No	No
Erie	Erie Municipal	EIK	15/33	Yes	Yes	Yes	Yes	Yes
Fort Morgan	Fort Morgan Municipal	FMM	14/32	Yes	Yes	No	N/P	No
Glenwood Springs	Glenwood Springs Municipal	GWS	14/32	No	No	No	No	No
Granby	Granby-Grand County	GNB	09/27	Yes	Yes	Yes	No	No

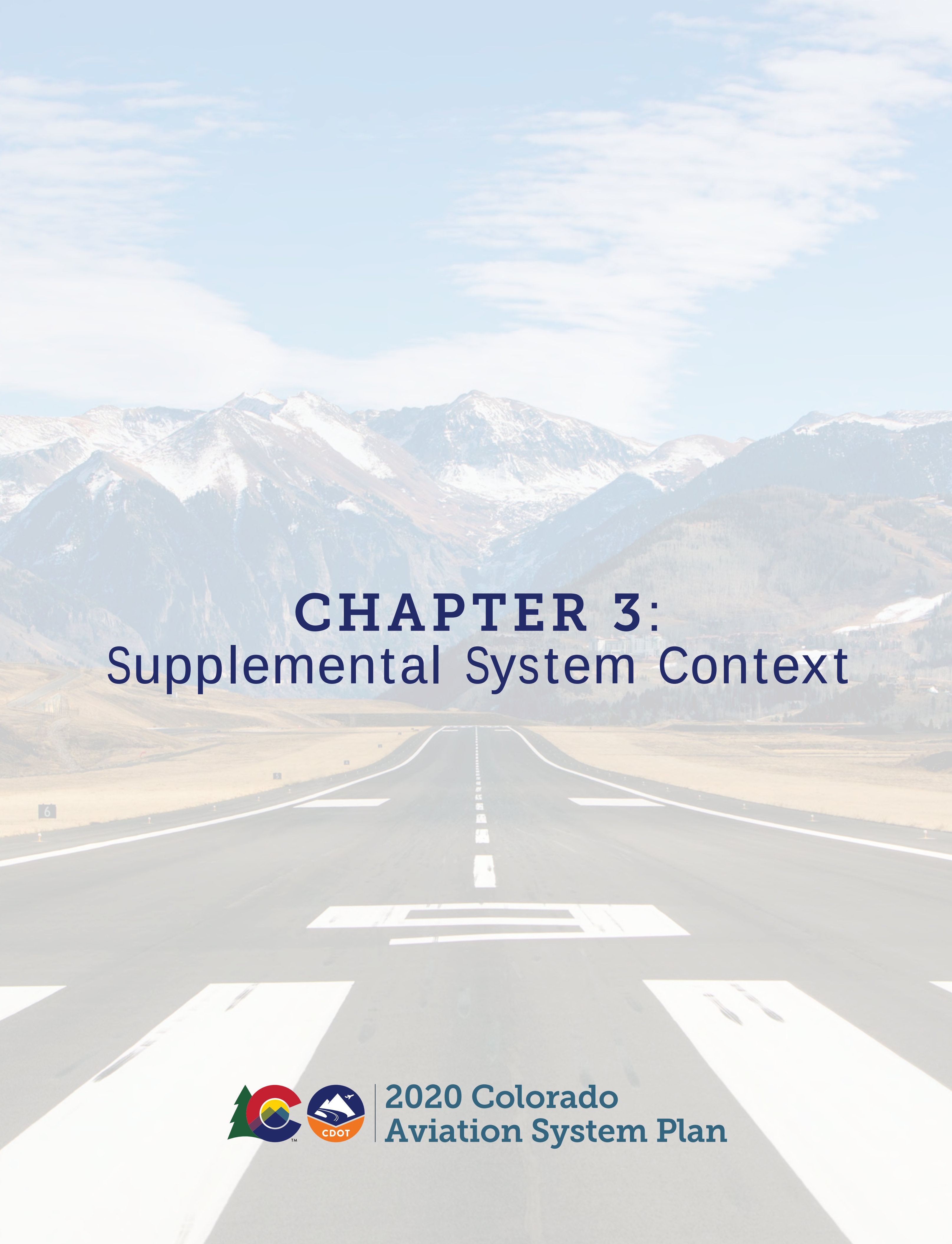
Associated City	Airport Name	FAA ID	Primary Runway	Adopted Land Use Controls	Adopted Height Controls	Adopted Part 77	Active Development Partnerships	Landside Business Parks
Greeley	Greeley-Weld County	GXY	17/35	Yes	Yes	Yes	Yes	No
Haxtun	Haxtun Municipal	17V	08/26	Yes	No	No	No	No
Holly	Holly	K08	17/35	No	No	No	No	No
Holyoke	Holyoke	HEQ	14/32	Yes	Yes	Yes	No	No
Julesburg	Julesburg Municipal	7V8	13/31	No	No	No	No	No
Kremmling	Mc Elroy Airfield	20V	09/27	Yes	Yes	Yes	Yes	No
La Junta	La Junta Municipal	LHX	08/26	Yes	Yes	Yes	Yes	Yes
La Veta	Cuchara Valley	07V	06/24	N/P	N/P	N/P	No	No
Lamar	Lamar Municipal	LAA	18/36	Yes	Yes	Yes	Yes	No
Las Animas	Las Animas-Bent County	7V9	08/26	No	No	No	No	No
Leadville	Lake County	LXV	16/34	Yes	Yes	Yes	Yes	No
Limon	Limon Municipal	LIC	16/34	Yes	Yes	Yes	Yes	No
Longmont	Vance Brand	LMO	11/29	Yes	Yes	Yes	Yes	No
Meeker	Meeker/Coulter Field	EEO	03/21	No	No	Yes	No	No
Monte Vista	Monte Vista Municipal	MVI	02/20	No	No	No	Yes	No
Nucla	Hopkins Field	AIB	05/23	No	No	No	Yes	No
Pagosa Springs	Stevens Field	PSO	01/19	Yes	Yes	Yes	No	No
Paonia	North Fork Valley	7V2	05/23	N/P	N/P	N/P	N/P	N/P
Rangely	Rangely	4V0	07/25	No	Yes	Yes	No	No
Rifle	Rifle Garfield County	RIL	08/26	Yes	Yes	Yes	No	No
Saguache	Saguache Municipal	04V	11/29	No	No	No	No	No
Salida	Harriet Alexander Field	ANK	06/24	Yes	No	Yes	Yes	No
Springfield	Springfield Municipal	8V7	17/35	No	No	No	No	No
Steamboat Springs	Steamboat Springs	SBS	14/32	N/P	N/P	Yes	Yes	Yes

Associated City	Airport Name	FAA ID	Primary Runway	Adopted Land Use Controls	Adopted Height Controls	Adopted Part 77	Active Development Partnerships	Landside Business Parks
Sterling	Sterling Municipal	STK	15/33	Yes	Yes	Yes	Yes	No
Trinidad	Perry Stokes	TAD	03/21	Yes	Yes	Yes	No	No
Walden	Walden-Jackson County	33V	04/22	Yes	Yes	No	No	No
Walsenburg	Spanish Peaks Airfield	4V1	09/27	Yes	Yes	Yes	No	No
Westcliffe	Silver West	C08	13/31	Yes	Yes	Yes	No	Yes
Wray	Wray Municipal	2V5	17/35	No	No	No	Yes	Yes
Yuma	Yuma Municipal	2V6	16/34	Yes	N/P	Yes	No	No

Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

2.11. Summary

This chapter includes a focused, in-depth view of CASP airport facilities (airside and landside), services, and other assets such as ground transportation options, safety, airport planning, and land use compatibility. This data is essential to the subsequent evaluation of the system's adequacy and resultant facility needs. Results from this chapter are used as the baseline for analysis in subsequent chapters.



CHAPTER 3:
Supplemental System Context

2020 Colorado
Aviation System Plan

Chapter 3. Supplemental System Context

3.1. Introduction

In its 2015 Advisory Circular (AC) on aviation system planning, AC 150/5070-7, change 1, *The Airport System Planning Process*, the Federal Aviation Administration (FAA) provided guidance on two innovative components of this strategic planning endeavor: intermodal integration/airport access and environmental considerations. Designed to be high-level analyses of key conditions affecting airports within a system, these components both indicate the FAA's recognition that airports exist within a broader context. In the case of intermodal integration, airports cannot operate without the ability to transport people and goods between the air and their next destinations on the ground. Airport operations are likewise affected by the natural and manmade environmental contexts in which they are sited. Further, airports and airport sponsors are statutorily obligated to comply with various federal, state, and local laws and regulations that govern the environment; this latter point is particularly germane when federal dollars are involved—as they often are when capital improvement projects are conducted.

For these reasons and others, intermodal integration/airport access and environmental considerations compose the supplemental system context of the Colorado aviation system. From a system planning perspective, it is important to conduct a high-level overview of these elements early so that subsequent analyses and final recommendations address and potentially mitigate future constraints to the system that lie beyond the aviation system directly. While related in purpose, intermodal integration/airport access and environmental considerations are addressed separately in the sections that follow.

3.2. Intermodal Integration/Airport Access

Airports represent one of the multiple transportation modes that provide residents and visitors with quick and convenient access to all areas of Colorado. Connections between remote communities, large cities, and recreational areas are made even more accessible through aviation, and airports undoubtedly provide an added measure of quality to the lives of Colorado citizens.

To access the state's aviation system, residents and visitors primarily utilize Colorado's robust network of vehicular roadways. These roadways include interstates, United States (U.S.) highways, state highways, toll roads, county roads, and city roads. For reference, there are five interstates in Colorado. Primary interstates include I-25 (north-south), I-70 (east-west), and I-76 (northeast-southwest). I-225 and I-270 provide additional connectivity in the Denver metro area. There are 19 U.S. highways, 135 state highways, and three toll roads in the state.[1] Although less common, airports can also be accessed by rail or from walking and biking trails within Colorado.

[1] Roadway statistics sourced from CDOT's Online Transportation Information System's Highway Data Explorer. pulled from http://dtdapps.coloradodot.info/otis/, April 2019.

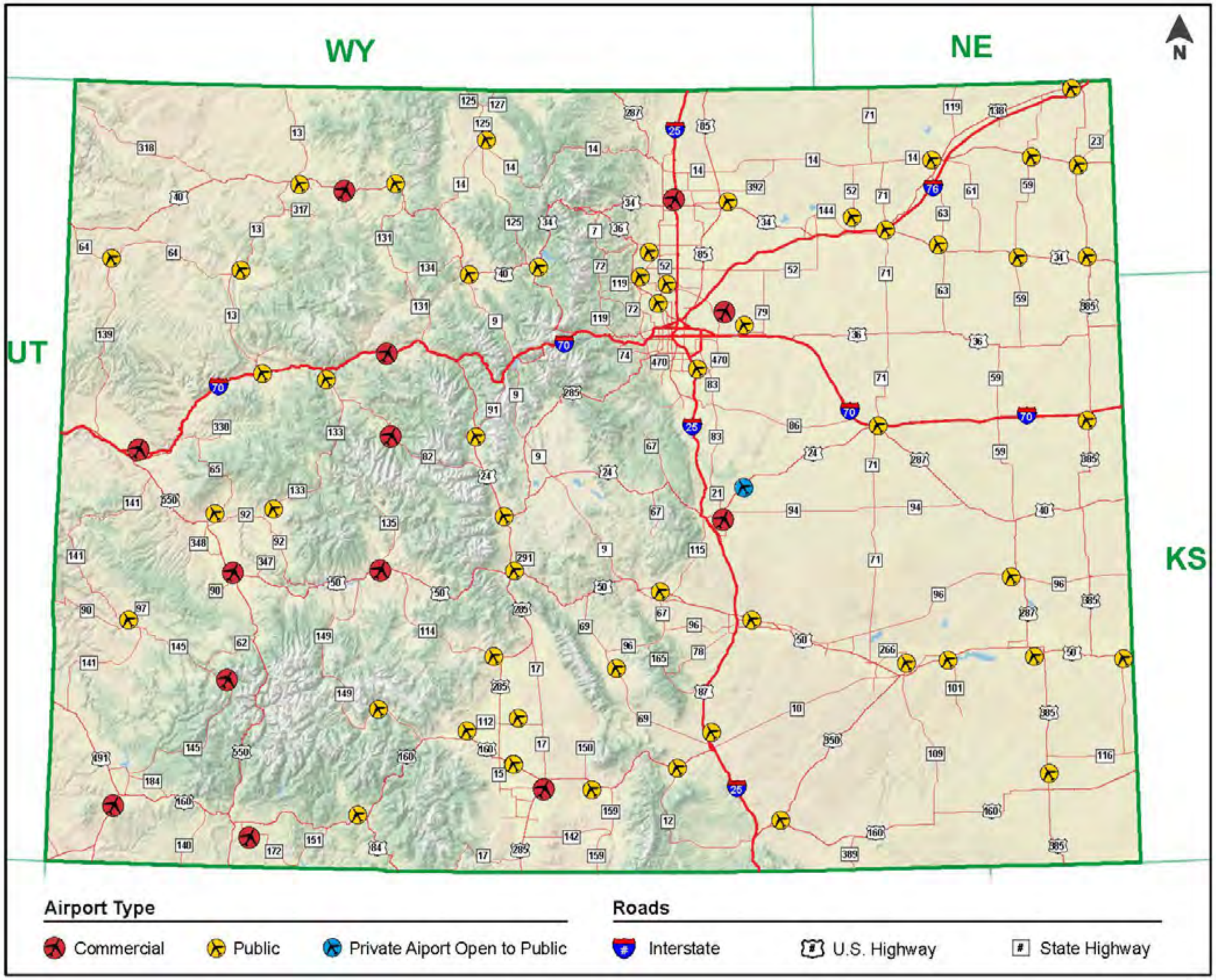
3.2.1. Airport Roadway Connections

Airport accessibility was studied first from a roadway perspective. Each airport was analyzed to determine its roadway connectivity with regards to interstates, U.S. highways, state highways, and toll roads. The analysis showed that each airport typically has access to at least one major roadway within reasonable distances. However, in some of the more distant corners of the state, several airports are located far from the nearest interstate. In fact, 20 of the 66 airports in the system are at least 100 miles away from their nearest interstate. Another 10 airports are at least 50 miles from their nearest interstate. Much of these distances are due to the topographical nature of the state and increased distances are required to traverse or circumnavigate the Rocky Mountains. It should also be mentioned that most of these distant airports are well connected with U.S. highways and state highways. Most airports not directly connected with a major roadway are connected by short distances over county or city roads.

Colorado's largest tollway, E-470, provides additional connectivity to all the Denver-area airports (Denver International, Centennial, Rocky Mountain Metropolitan, Colorado Air and Space Port, and Erie Municipal). Stretching 47 miles through Denver's suburbs, E-470 begins on the southeast side of the Denver metro area beginning in Centennial at the intersection of State Highway 470 and I-25 and makes its way north and west through Aurora, Brighton, Commerce City, and Thornton. The northwestern end of E-470 terminates just south of the I-25 and State Highway 7 intersection in north Thornton. From there, the roadway converts into the Northwest Parkway toll road which continues west before ending in Broomfield prior to reaching U.S. Highway 36.

Airport connectivity to adjacent roadway linkages were determined through online web-based resources including Google Earth and Google Maps. **Figure 3.1** depicts Colorado's major roadway network. Immediately following, a breakdown of the roadway connectivity analysis for the airports is provided in **Table 3.1**.

Figure 3.1. Colorado's Major Roadway Networks



Source: CDOT, 2018

Table 3.1. CASP Airport Roadway Connectivity

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Commercial Service								
Alamosa	San Luis Valley Regional	ALS				I-25 (4 L) (75 Mi)	US-160 (2 L) (2 Mi)	CO-17 (2 L) (2 Mi)
							US-285 (2 L) (1 Mi)	
Aspen	Aspen-Pitkin County	ASE			CO-82 (4 L)	I-70 (4 L) (38 Mi)		
Colorado Springs	Colorado Springs Municipal	COS			CO-21 (4 L)	I-25 (4 L) (5 Mi)	US-24 (4 L) (4 Mi)	CO-115 (4 L) (7 Mi)
							US-87 (4 L) (5 Mi)	CO-94 (2 L) (4 Mi)
Cortez	Cortez Municipal	CEZ				I-40 (4 L) (133 Mi)	US-160 (2 L) (2 Mi)	CO-145 (2 L) (6 Mi)
						I-70 (4 L) (150 Mi)	US-491 (2 L) (2 Mi)	
Denver	Denver International	DEN	Direct access provided by Peña Boulevard (6 L)			I-25 (10 L) (22 Mi)	US-6 (4 L) (18 Mi)	Toll E-470 (4L) (5 Mi)
						I-70 (4 L) (13 Mi)	US-36 (4 L) (12 Mi)	
						I-76 (4 L) (13 Mi)		
						I-225 (8 L) (14 Mi)		
Durango	Durango-La Plata County	DRO				I-40 (4 L) (158 Mi)	US-160 (2 L) (6 Mi)	CO-172 (2 L) (1 Mi)
						I-70 (4 L) (181 Mi)	US-550 (2 L) (8 Mi)	
Eagle	Eagle County Regional	EGE		US-6 (2 L)		1-70 (4 L) (3 Mi)		

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Fort Collins/ Loveland	Northern Colorado Regional	FNL	I-25 (4 L)	US-87 (2 L)			US-34 (4 L) (3 Mi)	CO-14 (4 L) (10 Mi)
							US-287 (4 L) (8 Mi)	CO-392 (2 L) (2 Mi)
Grand Junction	Grand Junction Regional	GJT				I-70 (4 L) (1 Mi)	US-50 (4 L) (8 Mi)	CO-139 (2 L) (18 Mi)
								CO-141 (2 L) (16 Mi)
Gunnison	Gunnison-Crested Butte Regional	GUC		US-50 (2 L)		I-25 (4 L) (158 Mi)		CO-114 (2 L) (9 Mi)
						I-70 (4 L) (123 Mi)		CO-135 (2 L) (1 Mi)
								CO-149 (2 L) (8 Mi)
Hayden	Yampa Valley	HDN				I-70 (4 L) (80 Mi)	US-40 (2 L) (1 Mi)	CO-13 (2 L) (19 Mi)
Montrose	Montrose Regional	MTJ		US-50 (4 L)		I-70 (4 L) (58 Mi)	US-550 (2 L) (2 Mi)	
Pueblo	Pueblo Memorial	PUB		US-50 (4 L)		I-25 (4 L) (8 Mi)		CO-78 (2 L) (12 Mi)
								CO-96 (4 L) (2 Mi)
Telluride	Telluride Regional	TEX				I-70 (4 L) (124 Mi)		CO-145 (2 L) (2 Mi)
								CO- 62 (2 L) (15 Mi)
General Aviation								
Akron	Colorado Plains Regional	AKO			CO-63 (2 L)	I-76 (4 L) (25 Mi)	US-34 (2 L) (1 Mi)	
Blanca	Blanca	05V				I-25 (4 L) (56 Mi)	US-160 (2 L) (2 Mi)	CO-159 (2 L) (6 Mi)

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Boulder	Boulder Municipal	BDU				I-25 (6 L) (16 Mi)	US-36 (2 L) (2 Mi)	CO-7 (4 L) (2 Mi)
								CO-119 (4 L) (2 Mi)
								CO-157 (4 L) (1 Mi)
Brush	Brush Municipal	7V5		US-34 (2 L)		I-76 (4 L) (2 Mi)	US-6 (4 L) (2 Mi)	CO-71 (2 L) (1 Mi)
Buena Vista	Central Colorado Regional	AEJ		US-24 (2 L)		I-25 (6 L) (92 Mi)		CO-306 (2 L) (2 Mi)
						I-70 (4 L) (60 Mi)	US-285 (2 L) (<1 Mi)	
Burlington	Kit Carson County	ITR		US-385 (2 L)		1-70 (4 L) (3 Mi)		
Canon City	Fremont County	1V6		US-50 (4 L)	CO-67 (2 L)	I-25 (4 L) (29 Mi)		CO-9 (4 L) (17 Mi)
								CO-115 (4 L) (4 Mi)
Center	Leach	1V8				I-25 (4 L) (103 Mi)		CO-112 (2 L) (2 Mi)
Colorado Springs	Meadow Lake	FLY				I-25 (6 L) (19 Mi)	US-24 (2 L) (< 1 Mi)	CO-94 (2 L) (8 Mi)
Craig	Craig-Moffat	CAG			CO-394 (2 L)	I-70 (6 L) (91 Mi)	US-40 (2 L) (3 Mi)	CO-13 (2 L) (4 Mi)
Creede	Mineral County Memorial	C24				I-25 (4 L) (142 Mi)		CO-149 (2 L) (< 1 Mi)
Del Norte	Astronaut Kent Rominger	RCV				I-25 (4 L) (110 Mi)	US-160 (2 L) (4 Mi)	CO-112 (2 L) (2 Mi)
							US-285 (2 L) (17 Mi)	

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Delta	Blake Field	AJZ				I-70 (4 L) (40 Mi)	US-50 (4 L) (2 Mi)	CO-65 (2 L) (6 Mi)
								CO-92 (4 L) (3 Mi)
								CO-348 (2 L) (4 Mi)
Denver	Centennial	APA				I-25 (6 L) (3 Mi)		CO-83 (6 L) (3 Mi)
						I-225 (8 L) (8 Mi)		CO-88 (6 L) (2 Mi)
								Toll E-470 (6 L) (2 Mi)
Denver	Rocky Mountain Metropolitan	BJC			CO-128 (2 L)	I-25 (6 L) (7 Mi)	US-36 (6 L) (1 Mi)	CO-121 (4 L) (1 Mi)
						I-70 (6 L) (9 Mi)	US-287 (4 Mi) (1 Mi)	Toll E-470 (4 L) (5 Mi)
						I-76 (4 L) (10 Mi)		
Denver	Colorado Air and Space Port	CFO				I-70 (4 L) (5 Mi)	US-36 (4 L) (5 Mi)	CO-36 (2 L) (3 Mi)
							US-40 (4 L) (5 Mi)	CO-79 (2 L) (8 Mi)
								Toll E-470 (4 L) (12 Mi)
Eads	Eads Municipal	9V7			CO-96 (2 L)	I-70 (4 L) (63 Mi)	US-287 (2 L) (2 Mi)	
Erie	Erie Municipal	EIK				I-25 (8 L) (4 Mi)	US-287 (4 L) (3 Mi)	CO-7 (2 L) (<1 Mi)
								Toll E-470 (4 L) (5 Mi)
Fort Morgan	Fort Morgan Municipal	FMM			CO-52 (2 L)	I-76 (4 L) (5 Mi)		

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Glenwood Springs	Glenwood Springs Municipal	GWS				I-70 (4 L) (4 Mi)		CO-82 (4 L) (3 Mi)
Granby	Granby-Grand County	GNB				I-70 (4 L) (47 Mi)	US-34 (2 L) (3 Mi)	CO-125 (2 L) (5 Mi)
							US-40 (4 L) (2 Mi)	
Greeley	Greeley-Weld County	GXY			CO-263 (2 L)	I-25 (4 L) (20 Mi)	US-34 (4 L) (4 Mi)	CO-392 (2 L) (4 Mi)
							US-85 (4 L) (3 Mi)	
Haxtun	Haxtun Municipal	17V				I-76 (4 L) (22 Mi)	US-6 (2 L) (<1 Mi)	CO-59 (2 L) (1 Mi)
Holly	Holly	K08			CO-89 (2 L)	I-25 (4 L) (148 Mi)	US-50 (2 L) (1 Mi)	
						I-70 (4 L) (104 Mi)	US-385 (2 L) (12 Mi)	
Holyoke	Holyoke	HEQ				I-76 (4 L) (33 Mi)	US-6 (2 L) (< 1 Mi)	CO-23 (2 L) (2 Mi)
						I-80 (4 L) (39 Mi)	US-385 (2 L) (1 Mi)	
Julesburg	Julesburg Municipal	7V8		US-138 (2 L)		I-76 (4 L) (6 Mi)		CO-59 (2 L) (11 Mi)
				US-385 (2 L)		I-80 (4 L) (6 Mi)		
Kremmling	Mc Elroy Airfield	20V		US-40 (2 L)		I-70 (6 L) (38 Mi)		CO-9 (2 L) (1 Mi)
								CO-134 (2 L) (8 Mi)

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
La Junta	La Junta Municipal	LHX				I-25 (4 L) (70 Mi)	US-50 (4 L) (5 Mi)	CO-10 (2 L) (7 Mi)
							US-350 (2 L) (7 Mi)	CO-71 (2 L) (18 Mi)
								CO-109 (2 L) (1 Mi)
								CO-194 (2 L) (4 Mi)
La Veta	Cuchara Valley	07V			CO-12 (2 L)	I-25 (4 L) (16 Mi)	US-160 (2 L) (3 Mi)	
Lamar	Lamar Municipal	LAA				I-25 (4 L) (116 Mi)	US-50 (4 L) (6 Mi)	
						I-70 (4 L) (100 Mi)	US-287 (2 L) (11 Mi)	
							US-385 (4 L) (4 Mi)	
Las Animas	Las Animas-Bent County	7V9				1-25 (4 L) (83 Mi)	US-50 (2 L) (1 Mi)	CO-101 (2 L) (1 Mi)
Leadville	Lake County	LXV				I-70 (4 L) (27 Mi)	US-24 (2 L) (1 Mi)	CO-82 (2 L) (14 Mi)
								CO-91 (2 L) (5 Mi)
Limon	Limon Municipal	LIC	I-70 (4 L)	US-24 (2 L)				CO-71 (2 L) (1 Mi)
				US-40 (2 L)				CO-86 (2 L) (10 Mi)
				US-287 (2 L)				

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Longmont	Vance Brand	LMO				I-25 (6 L) (11 Mi)	US-36 (2 L) (7 Mi)	CO-7 (2 L) (7 Mi)
							US-287 (4 L) (3 Mi)	CO-52 (2 L) (7 Mi)
								CO-66 (2 L) (5 Mi)
								CO-119 (4 L) (4 Mi)
Meeker	Meeker/Coulter Field	EEO				I-70 (4 L) (47 Mi)		CO-13 (2 L) (< 1 Mi)
								CO-64 (2 L) (5 Mi)
								CO-132 (2 L) (1 Mi)
Monte Vista	Monte Vista Municipal	MVI		US-160 (4 L)		I-25 (4 L) (84 Mi)		
				US-285 (4 L)				
Nucla	Hopkins Field	AIB				I-70 (4 L) (111 Mi)		CO-90 (2 L) (7 Mi)
								CO-141 (2 L) (4 Mi)
								CO-145 (2 L) (8 Mi)
Pagosa Springs	Stevens Field	PSO				1-25 (4 L) (168 Mi)	US-84 (2 L) (4 Mi)	CO-151 (2 L) (16 Mi)
								CO-160 (2 L) (< 1 Mi)

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Paonia	North Fork Valley	7V2				I-70 (4 L) (65 Mi)		CO-65 (2 L) (21 Mi)
								CO-92 (2 L) (8 Mi)
								CO-133 (2 L) (5 Mi)
Rangely	Rangely	4V0			CO-64 (2 L)	I-70 (4 L) (72 Mi)		CO-139 (2 L) (1 Mi)
Rifle	Rifle Garfield County	RIL				I-70 (4 L) (2 Mi)	US-6 (2 L) (4 Mi)	CO-13 (2 L) (4 Mi)
								CO-325 (2 L) (7 Mi)
Saguache	Saguache Municipal	04V			CO-114 (2 L)	I-25 (4 L) (129 Mi)	US-285 (2 L) (2 Mi)	
						I-70 (4 L) (132 Mi)		
Salida	Harriet Alexander Field	ANK				I-25 (4 L) (96 Mi)	US-50 (2 L) (3 Mi)	
						I-70 (4 L) (90 Mi)	US-285 (2 L) (2 Mi)	
Springfield	Springfield Municipal	8V7		US-287 (2 L)		I-25 (4 L) (125 Mi)	US-160 (2 L) (6 Mi)	
				US-385 (2 L)				
Steamboat Springs	Steamboat Springs	SBS				I-70 (4 L) (86 Mi)	US-40 (2 L) (2 Mi)	CO-131 (2 L) (8 Mi)
Sterling	Sterling Municipal	STK			CO-14 (2 L)	I-76 (4 L) (5 Mi)	US-6 (2 L) (5 Mi)	CO-61 (2 L) (6 Mi)
							US-138 (2 L) (3 Mi)	CO-71 (2 L) (19 Mi)
								CO-113 (2 L) (13 Mi)

Associated City	Airport Name	FAA ID	Direct Access Roadways (No. of Lanes)			Indirect Access Roadways (No. of Lanes) (Miles from Airport)		
			Interstate	U.S. Hwy	State Road/ Highway	Interstate	U.S. Hwy	State Road/ Highway
Trinidad	Perry Stokes	TAD				I-25 (4 L) (12 Mi)	US-160 (2 L) (5 Mi)	
							US-350 (2 L) (1 Mi)	
Walden	Walden-Jackson County	33V				I-70 (4 L) (100 Mi)		CO-14 (2 L) (2 Mi)
								CO-125 (2 L) (< 1 Mi)
Walsenburg	Spanish Peaks Airfield	4V1				1-25 (4 L) (1 Mi)	US-160 (2 L) (6 Mi)	CO-10 (2 L) (6 Mi)
								CO-69 (2 L) (5 Mi)
Westcliffe	Silver West	C08				I-25 (4 L) (47 Mi)	US-50 (2 L) (34 Mi)	CO-69 (2 L) (< 1 Mi)
								CO-96 (2 L) (10 Mi)
Wray	Wray Municipal	2V5				I-70 (4 L) (57 Mi)	US-385 (2 L) (< 1 Mi)	
						I-76 (4 L) (65 Mi)	US-34 (2 L) (2 Mi)	
Yuma	Yuma Municipal	2V6			CO-59 (2 L)	I-76 (4 L) (51 Mi)	US-34 (2 L) (1 Mi)	
						I-70 (4 L) (65 Mi)		

Sources: CDOT; Google Earth; Google Maps, 2019

3.2.2. Intermodal Integration

Using existing roadway, railway, or pedestrian trail connections, various modes of transportation are required to transport people and goods to and from each airport. Airport integration and community interconnectivity of various modes of transportation is an essential aspect of the aviation system's overall accessibility. Robust modal integration with airports and community interconnectivity encourages the free flow of people and overall economic activity between communities and the rest of the world, whereas poor integration and interconnectivity ultimately limits a community's ability to leverage aviation to its highest potential.

Integration, availability, and connectivity of rental cars, transit, passenger rail, rideshare, courtesy cars, and other applicable modes of transportation was analyzed as part of the CASP to help determine the overall integration and interconnectivity of transportation modes between airports and their local communities. The following subsections summarize this analysis.

3.2.2.1. Rental Car Availability

Rental cars allow airport users additional freedom and mobility when they land and help reduce their reliance on local pickups, courtesy car availability (discussed later in the chapter), or on transit systems (if available). Of equal importance, the availability of rental cars at airports greatly increases the airport's overall ability to facilitate economic activity within the community and region.

Data on the availability of rental car service was collected from airports through Inventory and Data Forms and during on-site visits of system airports. Of the 66 airports analyzed in the CASP, 42 reported having access to rental car services. This includes all 14 commercial service airports and 28 of the 52 general aviation airports.

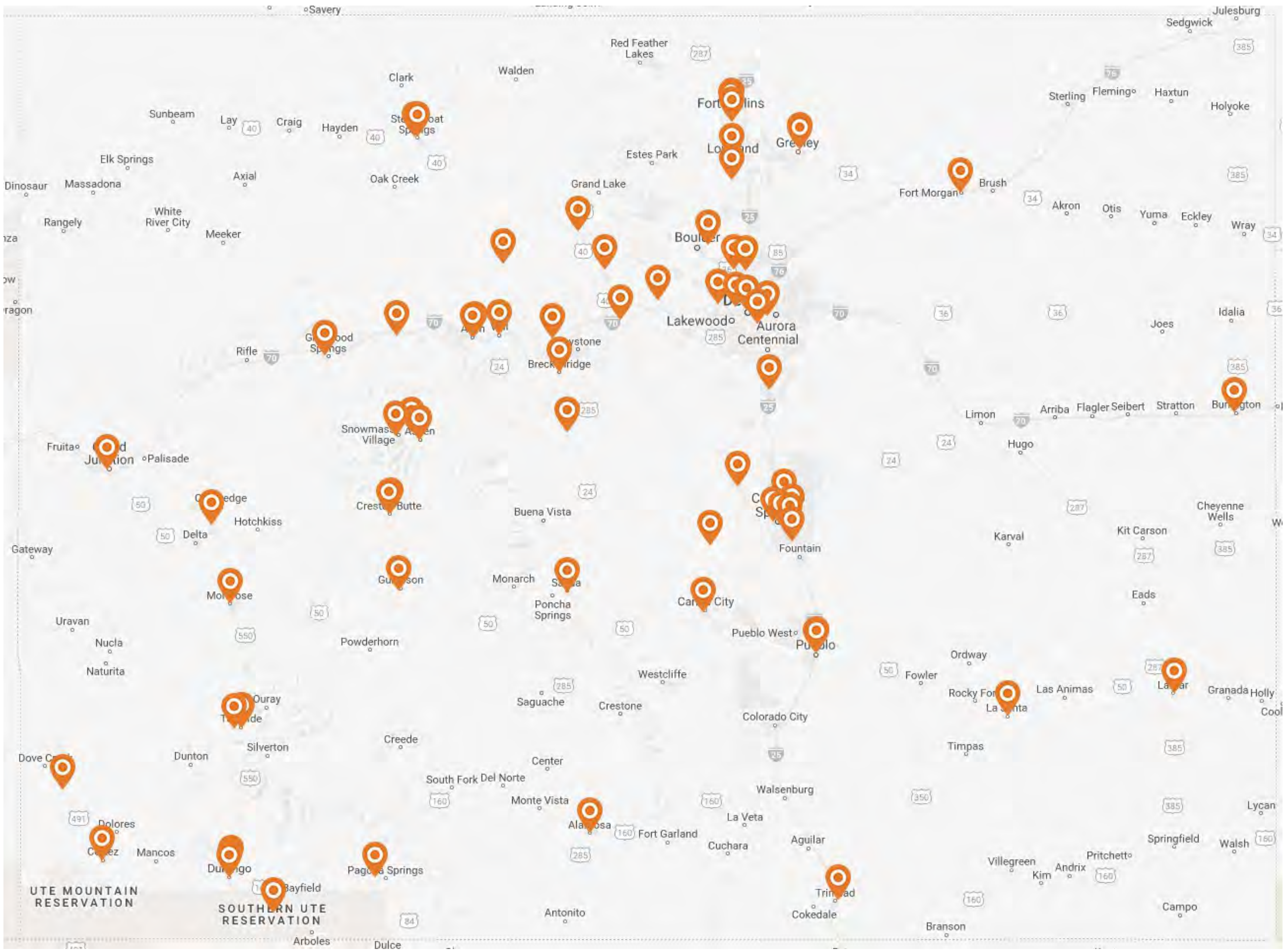
3.2.2.2. Public Transportation (Bus and Light Rail)

Public transportation (bus and/or light rail, also referred to as "transit") within a community can greatly increase accessibility and encourages equitable economic opportunity to all residents and visitors. Transit is a unique mode of transportation as it can substantially reduce vehicular traffic on community roadways. Because of this benefit, transit is often promoted as a preferred transportation mode for both visitors and local residents. Direct connections from airports to public transportation allow visitors quick and reliable mobility into and within the community. This level of convenience further boosts the airport's ability to connect the community and state to the rest of the world.

Inventory and Data Forms indicate that 16 of the 66 system airports are directly serviced by public transportation. Of these airports, nine are commercial service airports, and seven are general aviation airports. The five commercial service airports reporting no transit service include San Luis Regional, Cortez Municipal, Durango–La Plata County, Yampa Valley, and Telluride Regional airports.

Per the Colorado Association of Transit Agencies, 60 out of the 64 counties in Colorado provide transit services to their citizens and visitors. The Association's membership consists of 71 transit operators whose locations can be visualized in **Figure 3.2**.

Figure 3.2. Colorado Transit Operators



Source: Colorado Association of Transit Agencies, 2019

Denver International is the only airport in the state that has commuter rail integration. Connected by the Regional Transportation District's (RTD) "A Line," Denver International is linked to downtown Denver via six commuter rail stops between the airport and Denver's Union Station. With trains running every 15 minutes nearly 24 hours a day (a short break between 1:07 am and 3:15 am), this 37-minute trip far outpaces one's ability to access downtown via automobile given the distance and traffic between the airport and downtown. **Figure 3.3** displays the A Line transit map.

Figure 3.3. RTD A Line Route Map

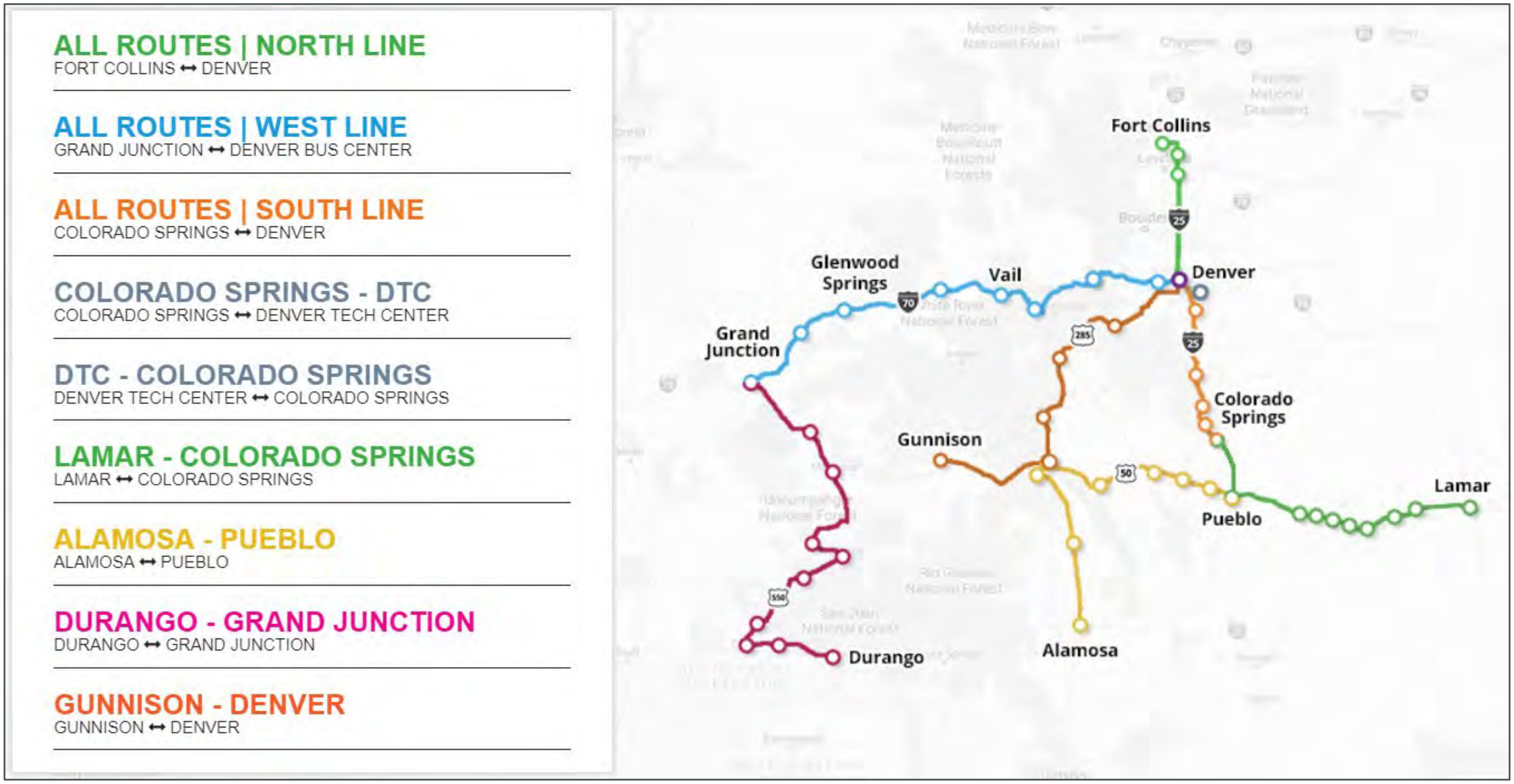
Source: RTD, 2019

3.2.2.3. Bustang Interregional Express Bus Service

Bustang is CDOT's interregional express bus service, connecting major populations, employment centers, and local transit entities along the I-25 and I-70 corridors and other routes to Lamar, Alamosa, Gunnison, Durango, Grand Junction, and many communities in between.

As of May 2019, Bustang routes have stops in 26 CASP airport-associated cities. Of these 26 cities, 16 do not have local public transportation available. While the Bustang system provides service to many cities and population centers, there are still several regions of the state that remain unserved. These regions are primarily in the rural areas of the northwest, northeast, and southeast corners of the state. **Figure 3.4** depicts each of the nine Bustang routes in operation.

Figure 3.4. Bustang Route Map



Source: CDOT, 2019

3.2.3. Shared Mobility (Rideshare, Bikeshare, and Scootershare)

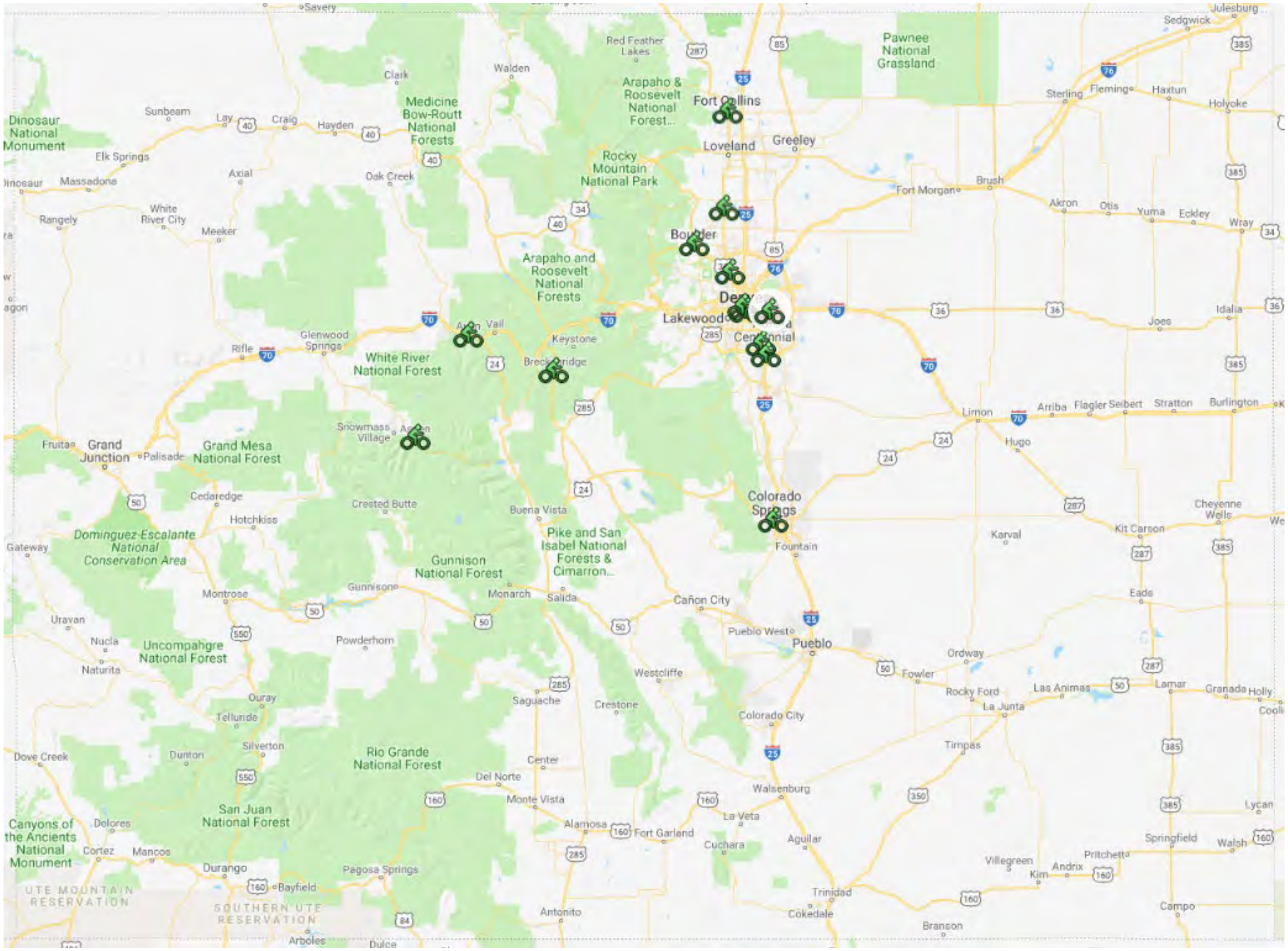
As somewhat of a phenomenon over the last few years, the concept of shared mobility has erupted as a new business model and mode of transportation. Shared mobility entails the shared use of a mobility device. Instead of each user owning their own car, bike, scooter, etc., these vehicles/devices are shared amongst a large user base. Rideshare companies such as Uber and Lyft pioneered this new shared mobility model and leveraged their user's independently owned vehicles to provide rides to other users.

As rideshare has evolved, both Uber and Lyft have further enhanced their services to not only provide users with a ride using another user's vehicle, but to also allow for shared carpooling. Uber has branded their carpool service as "UberPool" while Lyft has branded their service as "Shared." In these rideshare carpools, users can further share their ride with other users looking for transportation in the same direction. This allows for Uber and Lyft to achieve higher occupancy levels per trip. Using these services is also enticing for users as it further reduces the cost of their commute as everyone in the carpool pays an equitable share for the trip.

The Uber/Lyft business model has since caught on with other mobility devices such as bikes and scooters. However, with bikeshare and scootershare, private firms have partnered with communities to establish a network of shared bikes or scooters throughout the community. This network is often designed to place bike or scooters within the vicinity of other modal linkages such as bus and light rail stations. This provides a mobility option that helps solve the first and last mile connection issue between traditional transportation modes and users' final destinations.

Uber and Lyft rideshares are available in many communities throughout the state. In fact, 31 of the 66 CASP airports reported rideshare availability in their associated cities. As shown in **Figure 3.5**, bikeshare systems are currently in operation in Aspen, Aurora, Avon, Basalt, Boulder, Breckenridge, Centennial, Colorado Springs, Denver, Fort Collins, Longmont, Meridian, and Westminster. Although growing rapidly, scootershare systems are currently only operating in Denver and Aurora.

Figure 3.5. Colorado Bikeshare Systems



Source: Google Maps, 2019

3.2.4. Taxis and Courtesy Cars

For airports located in smaller communities where rental cars and public transportation may not be available, taxi service often provides the critical link between airports and their communities. However, taxi service is often unavailable in many rural areas of the state. For airports with this type of limited modal integration, a courtesy car can be used to maintain a link with the community. These cars are typically stored on-airport and sponsored by the airport owner/operator or by the fixed-base operator (FBO). Courtesy cars are often a favorite amenity for pilots and passengers who utilize these airports, as they provide a means to hop into town for meetings, meals, or entertainment. Users simply need to contact the car's overseer to gain access to the vehicle's keys. Typically, the user is responsible for purchasing fuel for the car for the next user. Without courtesy cars, many of Colorado's airports would isolate their visitors from connecting to local communities.

Data pulled from inventory forms and the 2018 Colorado Airport Directory show that 56 of the 66 CASP airports report having courtesy cars available. Of these 56 airports, 10 listed no other modal integration as being available (Brush Municipal, Astronaut Kent Rominger, Eads Municipal, Holyoke, Julesburg Municipal, Cuchara Valley, Hopkins Field, North Fork Valley, Rangely, and Walden-Jackson County airports). These 10 airports can provide courtesy transportation in areas where visiting pilots and passengers would otherwise have to remain at the airport without any other way to access the surrounding communities.

Four system airports reported having no transportation modes available and are listed as follows[2]:

- Blanca – Blanca Airport
- Holly – Holly Airport
- Monte Vista – Monte Vista Municipal Airport
- Westcliffe – Silver West Airport

Table 3.2 and **Figure 3.6** provide a tabular and visual summary of the intermodal integration for CASP airports.

[2] Leach Airport in Center identified livery services are available, so it is not included in this list; however, these services are not likely always available compared to other services. Saguache Municipal has a courtesy bicycle, but no motorized form of transportation from the airport.

Table 3.2. CASP Airport Intermodal Integration[3]

Associated City	Airport Name	FAA ID	Rental Car	Bus	Bustang Stop in Assc. City	Rail (Commuter & Freight)	TNC	Taxi	Courtesy Car	Other
Commercial Service										
Alamosa	San Luis Valley Regional	ALS	✓		✓		✓	✓		
Aspen	Aspen-Pitkin County	ASE	✓	✓			✓	✓	✓	Bikeshare
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓		✓	✓	✓	Bikeshare
Cortez	Cortez Municipal	CEZ	✓		✓		✓	✓	✓	
Denver	Denver International	DEN	✓	✓	✓	✓	✓	✓	✓	
Durango	Durango-La Plata County	DRO	✓		✓		✓	✓	✓	
Eagle	Eagle County Regional	EGE	✓	✓	✓		✓	✓	✓	
Grand Junction	Grand Junction Regional	GJT	✓	✓	✓		✓	✓	✓	Livery Services
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	✓	✓				✓	
Hayden	Yampa Valley	HDN	✓				✓		✓	
Fort Collins/ Loveland	Northern Colorado Regional	FNL	✓	✓	✓		✓	✓	✓	Bikeshare
Montrose	Montrose Regional	MTJ	✓	✓	✓				✓	
Pueblo	Pueblo Memorial	PUB	✓	✓	✓		✓	✓	✓	
Telluride	Telluride Regional	TEX	✓		✓			✓	✓	
General Aviation										
Akron	Colorado Plains Regional	AKO	✓						✓	
Blanca	Blanca	05V								

[3] "Livery service" is an umbrella term for any ground transportation that is for-hire but is not a taxi or rideshare. Many airports reported multiple "other" ground transportation options such as limousine, black car, charter bus, etc. and livery service is used to describe this segment of ground transportation service.

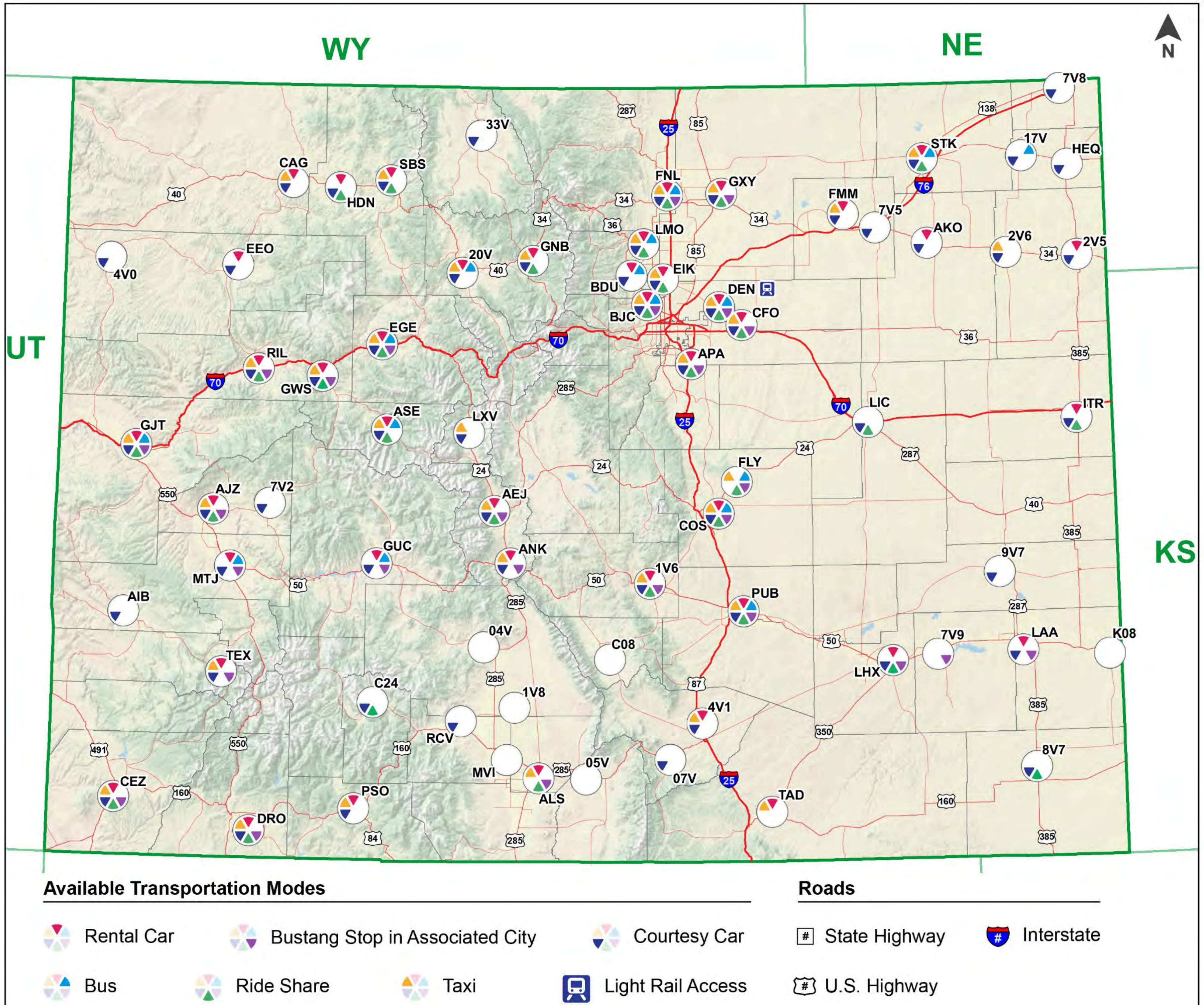
Associated City	Airport Name	FAA ID	Rental Car	Bus	Bustang Stop in Assc. City	Rail (Commuter & Freight)	TNC	Taxi	Courtesy Car	Other
Boulder	Boulder Municipal	BDU	✓	✓					✓	Bikeshare
Brush	Brush Municipal	7V5							✓	
Buena Vista	Central Colorado Regional	AEJ	✓		✓		✓	✓	✓	
Burlington	Kit Carson County	ITR	✓				✓		✓	
Canon City	Fremont County	1V6	✓		✓		✓	✓	✓	
Center	Leach	1V8								Livery Services
Colorado Springs	Meadow Lake	FLY		✓	✓		✓	✓		Courtesy Bicycle
Craig	Craig-Moffat	CAG	✓					✓	✓	
Creede	Mineral County Memorial	C24					✓		✓	
Del Norte	Astronaut Kent Rominger	RCV							✓	
Delta	Blake Field	AJZ	✓		✓		✓	✓	✓	
Denver	Centennial	APA	✓		✓		✓	✓	✓	Courtesy Bicycle, Bikeshare, Scootershare
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	✓		✓	✓	✓	Bikeshare, Scootershare
Denver	Colorado Air and Space Port	CFO	✓		✓		✓	✓	✓	
Eads	Eads Municipal	9V7							✓	
Erie	Erie Municipal	EIK	✓				✓	✓	✓	
Fort Morgan	Fort Morgan Municipal	FMM	✓					✓	✓	
Glenwood Springs	Glenwood Springs Municipal	GWS	✓		✓		✓	✓	✓	Livery Services
Granby	Granby-Grand County	GNB	✓				✓	✓	✓	
Greeley	Greeley-Weld County	GXY	✓		✓		✓	✓	✓	

Associated City	Airport Name	FAA ID	Rental Car	Bus	Bustang Stop in Assc. City	Rail (Commuter & Freight)	TNC	Taxi	Courtesy Car	Other
Haxtun	Haxtun Municipal	17V		✓					✓	
Holly	Holly	K08								
Holyoke	Holyoke	HEQ							✓	
Julesburg	Julesburg Municipal	7V8							✓	
Kremmling	Mc Elroy Airfield	20V	✓	✓				✓	✓	
La Junta	La Junta Municipal	LHX	✓		✓		✓		✓	
La Veta	Cuchara Valley	07V							✓	
Lamar	Lamar Municipal	LAA	✓		✓				✓	
Las Animas	Las Animas-Bent County	7V9			✓					
Leadville	Lake County	LXV						✓	✓	
Limon	Limon Municipal	LIC					✓		✓	
Longmont	Vance Brand	LMO	✓	✓			✓	✓	✓	Bikeshare
Meeker	Meeker/Coulter Field	EEO	✓						✓	
Monte Vista	Monte Vista Municipal	MVI								
Nucla	Hopkins Field	AIB							✓	Courtesy Bicycle
Pagosa Springs	Stevens Field	PSO	✓					✓	✓	
Paonia	North Fork Valley	7V2							✓	
Rangely	Rangely	4V0							✓	Livery Services
Rifle	Rifle Garfield County	RIL	✓		✓		✓	✓	✓	
Saguache	Saguache Municipal	04V								Courtesy Bicycle
Salida	Harriet Alexander Field	ANK	✓		✓			✓	✓	
Springfield	Springfield Municipal	8V7					✓		✓	

Associated City	Airport Name	FAA ID	Rental Car	Bus	Bustang Stop in Assc. City	Rail (Commuter & Freight)	TNC	Taxi	Courtesy Car	Other
Steamboat Springs	Steamboat Springs	SBS	✓				✓	✓	✓	
Sterling	Sterling Municipal	STK	✓	✓			✓	✓	✓	
Trinidad	Perry Stokes	TAD	✓					✓		
Walden	Walden-Jackson County	33V							✓	
Walsenburg	Spanish Peaks Airfield	4V1	✓					✓	✓	
Westcliffe	Silver West	C08								
Wray	Wray Municipal	2V5	✓						✓	
Yuma	Yuma Municipal	2V6						✓	✓	

Sources: 2018 Inventory & Data Form; CDOT 2018 Colorado Airport Directory

Figure 3.6. CASP Airport Intermodal Integration



Sources: 2018 Inventory & Data Form; CDOT 2018 Colorado Airport Directory; CDOT, 2019

3.2.4.1. Freight Rail

When integrated with airports, heavy rail provides a unique connection that can facilitate the movement of goods and commodities. This type of connection is rare. However, it does represent a transportation mode that can be integrated with airports.

Based on inventory data collected, there are no Colorado system airports with integrated heavy rail. However, several system airports are within close vicinity of one or more rail lines.

The Rocky Mountain Rail Park is proposed just east of Colorado Air and Space Port. This proposal, confirmed in 2018, is 620 acres and is proposed as an industrial park with rail access from Union Pacific Railroad (UP). Information on the site can be found at www.rockymountainrailpark.com.

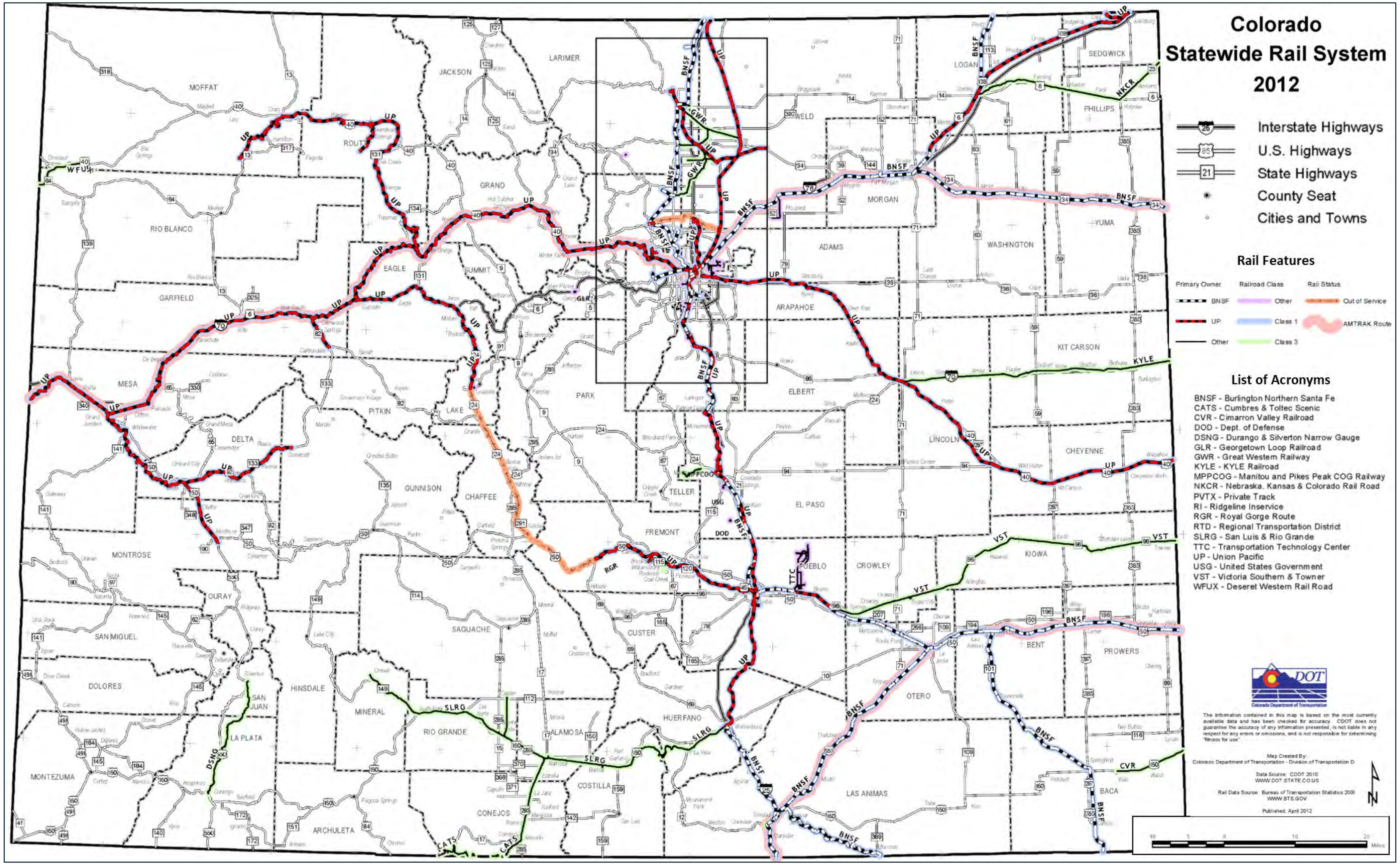
Pueblo Memorial Airport is also particularly well situated for heavy rail integration as old rail lines are already existing on airport property that connect the airport to major east/west and north/south rail lines (Burlington Northern and Santa Fe Railway [BNSF] and UP). However, these old on-site rail lines do not necessarily constitute heavy rail integration at present, as they are currently unused and would need to be extended a short distance to accommodate any type of intermodal facility.

Additionally, Pueblo is also uniquely connected to PuebloPlex via east/west rail lines by just a few short miles. PuebloPlex consists of nearly 16,000 acres of current and future development in rail-related industries including manufacturing, warehousing, storage, education and training, logistics and distribution, and research and development. The Transportation Technology Center Inc. (TTCI) is immediately north of PuebloPlex and is connected via rail. TTCI is a subsidiary of the Association of American Railroads that provides transportation research and testing.

With close proximities and rail connectivity to Pueblo Memorial Airport, these two major developments create a unique economic opportunity and present a compelling case for further exploration of heavy rail integration at the airport.

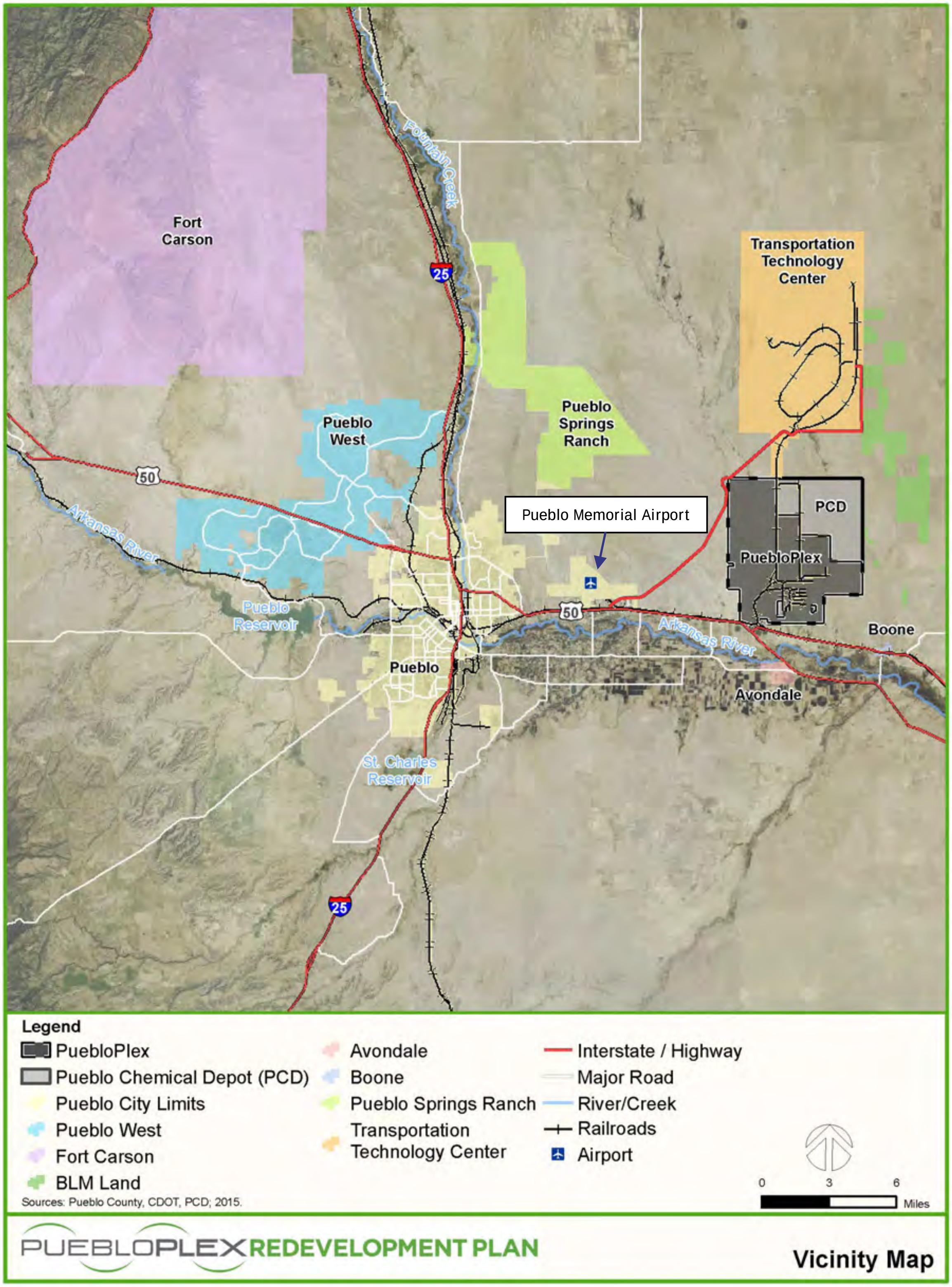
Figure 3.7 depicts the heavy rail network in Colorado. **Figure 3.8** provides a proximity map of these entities within the greater Pueblo region.

Figure 3.7. Colorado Statewide Rail System



Source: CDOT, 2019

Figure 3.8. Proximity Map of PUB with PuebloPlex, TTC, & Connecting Rail Network



Source: PuebloPlex, 2019

3.2.5. Transportation Areas of Concern

No transportation system is perfect. Through the CASP process, several areas of concern were identified through input from CDOT Division of Aeronautics staff, CDOT modal managers, metropolitan planning agencies and transportation planning region representatives, interviewed stakeholders, and Project Advisory Committee (PAC) members. The following subsections list a few of the most concerning areas regarding airport accessibility and intermodal integration that were identified.

3.2.5.1. Traffic Congestion

Colorado is currently experiencing large shifts in population that require constant adjustments to the state's transportation and mobility infrastructure. Commonly known as "rural flight" and "urban explosion," these types of population changes entail shrinking rural populations and growing urban populations. This dynamic is predominantly driven by younger generations migrating to urban areas for economic opportunities. As shown in **Table 3.3** and **Table 3.4**, according to the U.S. Census Bureau, Colorado was the eighth-fastest-growing state in numeric population growth and seventh-fastest-growing by percentage of population growth from 2017 to 2018.

Table 3.3. Top 10 States in Numeric Growth: 2017-2018

Rank	Name	2010	2017	2018	Numeric growth
1	Texas	25,146,114	28,322,717	28,701,845	379,128
2	Florida	18,804,580	20,976,812	21,299,325	322,513
3	California	37,254,523	39,399,349	39,557,045	157,696
4	Arizona	6,392,288	7,048,876	7,171,646	122,770
5	North Carolina	9,535,736	10,270,800	10,383,620	112,820
6	Washington	6,724,540	7,425,432	7,535,591	110,159
7	Georgia	9,688,709	10,413,055	10,519,475	106,420
8	**Colorado**	**5,029,316**	**5,615,902**	**5,695,564**	**79,662**
9	South Carolina	4,625,381	5,021,219	5,084,127	62,908
10	Nevada	2,700,679	2,972,405	3,034,392	61,987

Source: U.S. Census Bureau, 2019

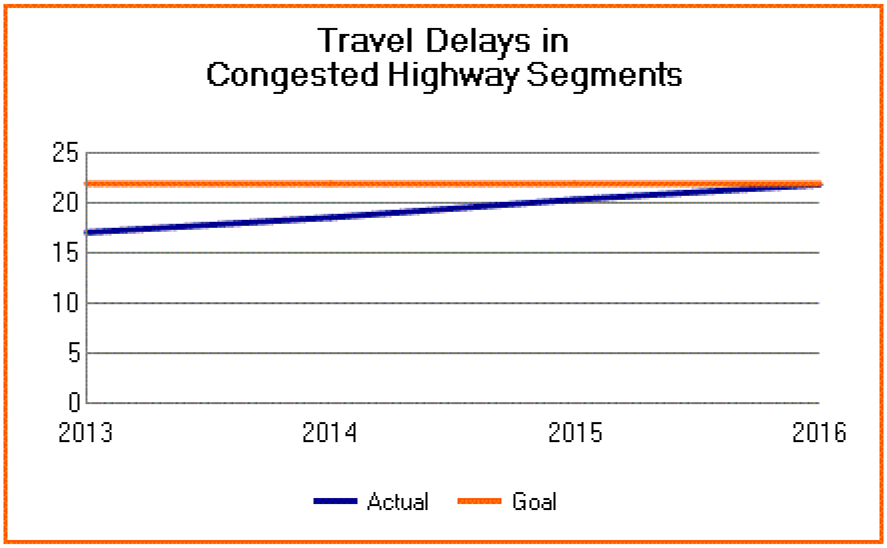
Table 3.4. Top 10 States in Percentage of Growth: 2017-2018

Rank	Name	2010	2017	2018	Percent growth
1	Nevada	2,700,679	2,972,405	3,034,392	2.1%
2	Idaho	1,567,657	1,718,904	1,754,208	2.1%
3	Utah	2,763,891	3,103,118	3,161,105	1.9%
4	Arizona	6,392,288	7,048,876	7,171,646	1.7%
5	Florida	18,804,580	20,976,812	21,299,325	1.5%
6	Washington	6,724,540	7,425,432	7,535,591	1.5%
7	**Colorado**	**5,029,316**	**5,615,902**	**5,695,564**	**1.4%**
8	Texas	25,146,114	28,322,717	28,701,845	1.3%
9	South Carolina	4,625,381	5,021,219	5,084,127	1.3%
10	North Carolina	9,535,736	10,270,800	10,383,620	1.1%

Source: U.S. Census Bureau, 2019

Rapid population growth typically leads to congestion of existing infrastructure due to an increase of users that stretch this infrastructure to its capacity. Unfortunately, rapid population shifts can be somewhat difficult to predict during long-range planning efforts which can inhibit a community's ability to keep pace with infrastructure demand. Coupled with slow and costly development of new/expanded infrastructure, traffic congestion is rapidly becoming a mobility and accessibility issue for the state. **Figure 3.9** produced by CDOT, depicts the trend of increasing travel delays on congested highway segments. While CDOT maintained travel time delays to below their goal of 22 minutes through 2016, the increasing trend suggests that delay time continues to increase. Of note, travel time delay data has not been updated on the CDOT website beyond 2016.

Figure 3.9. Travel Delay Trend in Congested Highway Segments



Year	2013	2014	2015	2016
Long Range Goal	22	22	22	22
Actual	17.1	18.6	20.4	21.9

Source: CDOT, 2019

The I-70 corridor connecting the Denver metro area both east and west across the state has become a particularly concerning area of traffic congestion. Not only is this interstate taxed by a growing state population, it also winds its way through the Rocky Mountains connecting several resort communities such as Breckenridge, Copper Mountain, Vail, Beaver Creek, and Aspen to name a few. Winter months are especially taxing on the I-70 corridor due to adverse weather and high quantities of skiers making their way to the many ski resorts nestled in the mountains along the interstate.

To combat I-70 congestion, CDOT has developed an I-70 Mountain Corridor Vision that addresses the 144-mile route of I-70 through Colorado's Rocky Mountains that includes improvements to transit, highway, safety, and environmental protection. This vision along with documentation regarding associated planning and decision making can be found at https://www.codot.gov/projects/i-70mountaincorridor/vision.html

3.2.5.2. Airport Isolation from Bike/Pedestrian (Ped) Accessibility

During the many outreach efforts associated with the CASP, project staff held collaboration meetings with the many CDOT modal managers, metropolitan planning agencies, and transportation planning region representatives who provided insight on the intermodal integration of the state's aviation system. During these discussions, CDOT's Multimodal Planning Branch representatives identified a prevailing concern regarding limited accessibility via walking or biking infrastructure within most communities throughout the state.

Most airport users do not expect to arrive at an airport entirely by foot or bike due to having baggage that may include flight bags for pilots and other gear such as recreational equipment or other luggage that are not conducive to being transported on a bike. However, improvements can always be made to the intermodal connectivity of transportation modes with bike and pedestrian infrastructure. These types of connectivity improvements provide users with greater first and last mile connectivity to the rest of the transportation system. That said, improving bike and pedestrian linkages typically progress at the same rate as other transportation mode enhancements. For example, a bus stop and transit service would be a precursor to a bike or pedestrian route connecting that transit stop with the surrounding community. Accordingly, overall expansion to intermodal connectivity will naturally present additional opportunities to provide first and last mile connections with bike and pedestrian routes/infrastructure.

To encourage and increase walking and cycling in the state, CDOT has established a Bicycle and Pedestrian Program that develops both infrastructure projects and promotional programs.[4] An online interactive bicycle network map has also been developed as part of this program available at http://dtdapps.coloradodot.info/bike#home.

As part of this program, CDOT has produced a Statewide Bicycle and Pedestrian Plan (adopted in 2012, amended in 2015)[5] and a Colorado Guide for the Development of Local and Regional Bicycle and Pedestrian Plans.[6] Unfortunately, the Statewide Bicycle and Pedestrian Plan does not provide much content on the integration of bike and pedestrian infrastructure with airports. However, the Guide for the Development of Local and Regional Bicycle and Pedestrian Plans does recommend that linkages of bike and pedestrian systems should be provided wherever possible to interconnect with two or more modes of transportation. The guide recommends the provision of appropriate facilities for cycling and walking to bus stops and terminals, train stations, park and ride lots, airports, and other modal facilities.

3.2.5.3. Rideshare Concerns

Another concern raised during outreach efforts entails the rapid growth of rideshare (e.g., Uber and Lyft) as an emerging mode of transportation. A few concerns regarding rideshare interaction with airports are discussed below, such as its propagation of vehicular traffic, congestion of airport curb

[4] Bicycle and Pedestrian Program Info available at: https://www.codot.gov/programs/bikeped

[5] The Statewide Bicycle and Pedestrian Plan can be accessed here: https://www.codot.gov/programs/bikeped/building-a-bike-ped-friendly-community/Bike_Ped_Plan

[6] The Colorado Guide for the Development of Local and Regional Bicycle and Pedestrian Plans can be accessed here: https://www.codot.gov/programs/bikeped/building-a-bike-ped-friendly-community

fronts, reduction of airport parking revenue, and encouraged growth of inequitable Americans with Disabilities Act (ADA) accessibility.

Propagation of Vehicular Traffic

Since their inception, Uber and Lyft have argued that their ridesharing services have helped to reduce traffic congestion within areas of operation. However, there seems to be lack of consensus on this topic amongst the academic and journalism communities. A brief literature review produces several studies and articles that both support and oppose the claim of reduced traffic congestion. However, one thing is certain: the popularity and growth of rideshare as a mode of transportation further encourages the continued use (and perhaps growth) of motorized vehicles providing transportation. Encouraged use of rideshare in the form of carpools, rather than single passenger trips, would certainly help to reduce the overall impact.

Congestion of Airport Curb Fronts

As the use of rideshare continues to increase, a larger percentage of airport users will be dropped off and picked up at airport curb fronts rather than parking a vehicle in traditional parking facilities. This naturally causes curb fronts to exceed their originally designed capacities. Associated concerns with crowded curb fronts include increased vehicle/vehicle and vehicle/pedestrian interactions leading to a higher collision risks and reduced user experience due to congestion and delay. Commercial service airports are testing various methods of ridesharing pick-up and drop-off points to reduce the curb front congestion, but a preferred method has not yet been determined and is likely an individual airport decision based on available space, the roadway network, and other issues potentially impacting curb front congestion.

Reduction of Airport Parking Revenue

As touched on in the section above, increased use of rideshare as a mode of transportation naturally reduces the demand on existing airport parking facilities. Similarly, any increased ridership of transit options (bus or light rail) will also affect the demand on parking. This presents a problem for airport operators as parking fees represent one of their largest revenue sources. Future sources of revenue will need to be explored to sustain operating budgets as all indications point to the continued growth of alternative transportation modes such as rideshare and transit providing access to and from airports.

Inequitable ADA Accessibility

A primary concern voiced by CDOT modal managers has to do with the limited capacity of rideshare companies to accommodate ADA users. As most drivers for rideshare companies use their own personal vehicles, the vast majority of the overall rideshare fleet is not configured to accommodate wheelchairs or other mobility equipment. Therefore, as rideshare grows as a transportation mode, the equitable share of ADA compatible transportation will naturally decrease.

Both Uber and Lyft have implemented accessibility programs to provide a limited number of vehicles that can accommodate non-folding wheelchairs. However, these services are only available in select markets and available vehicles can often take a considerable amount of time to arrive once a trip has been requested.

CDOT actively advocates for accessibility as required by the ADA and has developed an Accessibility Program and Transition Plan to help public entities to transition their facilities to ADA compliance.

These transitional improvements focus on ADA compatible curb ramps, rest stops, and building facilities. Provision of ADA compatible vehicles is left to the various transit districts, rideshare companies, taxi services, etc. The challenge lays in ensuring these types of entities, especially the growing rideshare companies, provide an equitable number of ADA-compliant vehicles across all service areas.

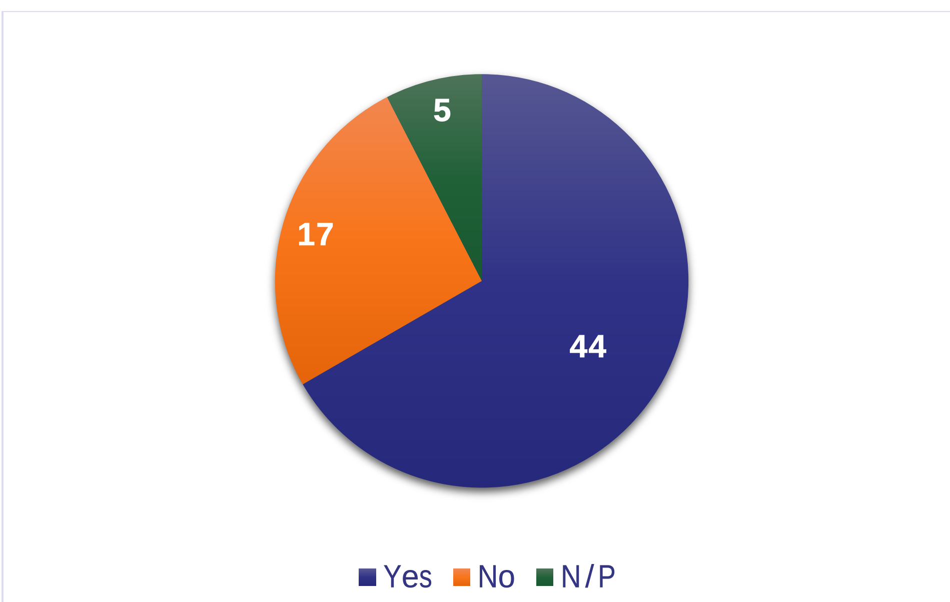
3.2.6. Planned Improvements

Planning is a critical component of ensuring viable growth and coverage of the state's overall accessibility and modal interconnectivity. Planning allows communities to anticipate future growth and shifts in demand to best plan for desired outcomes. Following planning efforts, specific improvements can be identified and implemented along planned timelines or upon reaching specific milestones. The following subsections touch on local long-range planning efforts and specific infrastructure improvements that are either in process or planned for the near future for Colorado's transportation/mobility systems.

3.2.6.1. Long-Range Planning

A primary goal of aviation system planning is to help airports integrate their needs and impacts with local land use and transportation planning efforts. Collaboration between airports and local land use authorities through local and regional planning efforts will help to ensure that airports are better integrated into their communities and specific access and other needs are being met by all parties involved. Accordingly, as part of the CASP, airport managers were asked to identify if their airport has been considered within their local land use or transportation planning efforts. As shown in **Figure 3.10** 44 of the 66 CASP airports have been considered in local land use or transportation plans. Seventeen airports responded that their airport has not been included or identified in local or regional planning efforts, with five airports not providing any information.

Figure 3.10. CASP Airports Considered in Local Land Use or Transportation Plans



Source: 2018 Inventory & Data Form

3.2.7. CDOT Statewide Transportation Plan 2040, Transportation Matters

CDOT's current long-range statewide transportation plan entitled "Transportation Matters" is intended to guide the state's multimodal transportation system through 2040. An update to this plan is underway, but data are not currently available from the new plan. The plan outlines the multimodal transportation options and what they will look like over the next 10 to 25 years. As a whole, the plan was developed by taking important features and findings from regional transportation plans, council of government plans, and modal plans from transit, freight, rail, aviation, and bicycle and pedestrian modes. With the intention of being a living document, the plan is an important tool to help the state to respond to changing needs over time. The goal of the 2045 SWP is to develop a 10-year strategic pipeline of projects inclusive of all modes informed by both a data-driven needs assessment and public and stakeholder input. The plan is anticipated to finish in spring 2020.

3.2.7.1. Planned Transportation Infrastructure Improvements

Through the statewide transportation planning efforts, Transportation Matters identified $46 billion dollars of transportation needs over the 25-year span of the plan. In the same time, CDOT will have only generated $21.1 billion in revenue. This contrast in funding needs and availability is vast and will need substantial effort on the part of the Colorado public to help bridge the funding gap.

These identified needs have been prioritized within CDOT's Statewide Transportation Improvement Program (STIP) which lays out a program of planned transportation projects to be undertaken over the coming years. The STIP also incorporates the transportation improvement plans (TIPs) from each of the state's metropolitan planning organizations (MPOs). The STIP is updated annually to add a new year's worth of projects to the four-year program. The 2019 STIP summary report which lists each of the planned projects for 2019-2022 was published in May 2019. At 79 pages in length, the report lists many improvements for each type of transportation mode, especially for transit and pedestrian improvements. For I-70, a search produced 54 projects with "I-70" in the description.

One significant project to date is Central 70, the biggest project in CDOT's history. This $1.2 billion project will reconstruct a 10-mile stretch of I-70 between Brighton Boulevard and Chambers Road, add one Express Lane in each direction, remove an aging 55-year-old viaduct, lower the interstate between Brighton and Colorado boulevards, and install a four-acre park over a portion of the lowered interstate. As one of the state's most important economic backbones, this corridor is home to 1,200 businesses, provides regional connection to Denver International Airport, and carries approximately 200,000 vehicles per day. When completed, the Central 70 Project will reduce congestion, improve safety, and better accommodate future growth along this vital transportation corridor. Design began in January 2018 with construction anticipated for completion in 2022.[7]

Additionally, CDOT is implementing a multiphase project to improve capacity and safety along the I-25 corridor between US 36 in the Denver metro area to CO 1 in Wellington in northern Colorado. Known as the I-25 North project, these improvements will provide modern multimodal transportation solutions for residents, workers, and visitors—as well as freight and other goods—traveling between Denver and

[7] Additional information about the Central 70 Project, as well as links to the latest project updates, are available online at www.codot.gov/projects/i70east (accessed September 2019).

Wyoming.[8] The $350 million I-25 South Gap project is improving an 18-mile stretch of interstate from south of Castle Rock to Monument. Known as "The Gap," this section is the only four-lane section of I-25 connecting Colorado's two largest cities, Denver and Colorado Springs. Improvements will widen interstate shoulders, add an Express Lane in each direction, construction additional wildlife crossings and deer fencing, and improve pavement and other infrastructure.[9] Both the I-25 South Gap and I-25 North projects will improve access and connectivity to the Front Range Airports.

Figure 3.11. Central 70 Project Overview

Source: CDOT, 2019

An interactive map of all STIP projects can be found at the following location: http://dtdapps.coloradodot.info/prolojs/

It is important to note that all capacity improvements on the state highway system are subject to the Managed Lanes Policy Directive (1603.3). The policy requires that managed lane strategies be strongly considered during the planning process for all state highway facilities that are or will be congested. Strategies may include tolled express lanes, BRT, and high-occupancy vehicle requirements. This policy is designed to maximize investments into the multimodal system and find flexible, cost-effective strategies for sustaining or enhancing the movement of goods and people.[10] Additionally, CDOT has adopted a Risk-based Asset Management Plan to articulate the strategies necessary to make the most efficient decisions regarding the allocation of resources. These strategies are designed to help direct funding to the state's most critical projects, support the greatest return on state investments, and offer greater accountability into the use of public funds.[11] An update to this plan is currently

[8] Additional information about the I-25 North project is available online at www.codot.gov/projects/north-i-25 (accessed September 2019).
[9] Additional information about the I-25 South Gap project is available online at https://www.codot.gov/projects/i25-south-gap (accessed September 2019).
[10] CDOT Office of Policy & Government Relations. (January 2013). "Managed Lanes Policy Directive." Available online at www.codot.gov/about/governmentrelations/news-publications/policy-briefs/cdot-s-managed-lanes-policy-directive (accessed September 2019).
[11] CDOT. (December 2013). "Risk-based Transportation Asset Management Plan." Available online at www.codot.gov/programs/colorado-transportation-matters/documents/risk-based-transportation-asset-management-plan.pdf (accessed September 2019).

underway, which is anticipated to include CDOT's emphasis on maintaining the roadway network that provides access to airports.

3.2.8. Potential Traffic Reduction Methods

Oftentimes building additional infrastructure or widening roadways does not solve congestion as induced demand takes affect and nullifies efforts to improve travel delay. Induced demand is a concept that can be summarized in the commonly known phrase of "if you build it, they will come". Simply put, when travelers see that there is additional capacity on roadways, they will adjust their trip planning to take advantage of the newly found path of least resistance. However, when constraints are placed on infrastructure, travelers will look to alternative routes or modal options instead. Perhaps they will decide to use transit or telecommute rather than drive to their office, or perhaps they will form a carpool to take advantage of Colorado's Express Lanes. In these types of situations, the solution to stressed infrastructure will need to be alleviated through alternative traffic reduction methods.

3.2.8.1. Promotion of Park and Ride/Transit Use

As discussed in earlier sections, the Bustang interregional bus system coupled with local transit districts and the Denver metro area's commuter and light rail systems are capable of transporting travelers to far-reaching areas of the state. If travelers reach the first point of transit in their area, then they theoretically can reach a large portion of the state through transit links. Oftentimes, the first and last mile connection between communities and transit stops is the largest barrier preventing a traveler to choose transit over a personal vehicle as their preferred transportation mode.

The establishment of strategically placed park and ride lots can help travelers to connect with their nearest transit stops and make that first and last mile link between their homes and transit options. Currently, Colorado has many park and ride lots that are owned by several different entities such as CDOT, local transit districts, and private entities. The total number and location of all park and ride lots in the state is difficult to quantify as a single data source does not appear to exist. However, CDOT alone maintains 27 lots and RTD (the largest transit system in the state) has a published list of 85 lots. The Roaring Fork Transportation Authority (RFTA) serving the Aspen, Glenwood Springs, and Rifle areas is the second largest transit system in the state and offers 12 park-and-ride lots throughout the Roaring Fork Valley. Taking into consideration the park-and-ride lots operated by the other 69 transit operators and local municipalities, Colorado offers a network of park and ride lots throughout the state.

Colorado's robust skiing industry is world-renowned. However, ski area vehicular infrastructure is characteristically limited due to the natural terrain. This causes congestion on narrow roadways and a shortage of available parking. As such, promotion of park-and-ride lots and transit usage is particularly important in these areas. In particular, RFTA and Eagle County Transit (ECO Transit) provide robust transit service to their associated ski areas. Of note, RFTA has implemented the first rural bus rapid transit (BRT) system in the nation to help alleviate congestion and improve mobility up and down the Roaring Fork Valley between Aspen, Glenwood Springs, and Rifle. Service is provided seven days a week with 12-minute headways (or less) between busses. BRT systems greatly serve to promote the use of park-and-ride lots as they provide similar commute times (or less) due to their ability to bypass congested corridors. Commuters are especially encouraged to take the bus when BRT busses consistently pass them by while stuck in traffic. Similarly, ECO Transit operates 21 hours a day, 7 days a week, with a fleet of 31 busses between the Gypsum, Vail, and Leadville mountain communities.

Furthermore, as mentioned in the Shared Mobility section above, bikeshare and scootershare are an emerging mode of transportation that can greatly help to alleviate the first and last mile issue. This is especially true when they are strategically placed at transit stops and park and ride facilities. Accordingly, to best enhance the first and last mile connectivity, improvements to bike and pedestrian infrastructure should be considered for all communities.

Further promotion of this interconnected network of transit, park and ride facilities, and shared mobility options can help to increase awareness and ridership, thus reducing the number of single occupancy vehicles on the roadways. As such, CDOT is actively working to enhance multimodal options by expanding current infrastructure and providing additional support to mobility programs. Existing park and ride transit locations will be re-envisioned as "mobility hubs," which will emphasize multimodal options, seamless transition between modes, real-time passenger information, and rider convenience. Mobility hubs may include Bustang/Outrider or other interregional transit services, local transit service connections, electric vehicle charging stations, parking spaces, bicycle and pedestrian connections, and Wi-Fi to connect with first and last mile services. Hubs could help build demand for future Front Range mobility options, such as possible rail service along the I-25 and other essential service corridors.

3.2.8.2. Disincentives for Single Occupancy Vehicles & Incentives for High Occupancy Vehicles

It's an unfortunate fact that a large portion of vehicles on Colorado roadways are single occupancy vehicles. These types of vehicular trips take up a large proportion of roadway capacity per person. In comparison, a high occupancy vehicle (carpool, van pool, or bus) can transport a larger number of people per vehicle thereby significantly reducing the amount of roadway capacity required per person. This principle represents an opportunity to increase the carrying capacity of Colorado's existing roadways through disincentives for single occupancy vehicles and incentives for high occupancy vehicles. These types of disincentives and incentives can be creative in nature.

The existing Express Lanes program is an example of an incentive already employed to encourage travelers to form high occupancy vehicles. Similarly, the CDOT carpool/vanpool matching program assists travelers to find other travelers who are taking a similar route to help pair them into a carpool or vanpool. This program is especially helpful for commuters who make multiple trips on a similar route and on a similar schedule. A few new ideas could include the incentive of providing reserved close-up parking or free parking to high occupancy vehicles at end destinations, including airports especially for airport employees. Or a similar disincentive would be to require single occupancy vehicles to pay a higher parking rate or require that they park at the far end of parking lots. Tax credits for individuals or companies able to document consistent high occupancy vehicle use could also be explored.

As discussed in the Shared Mobility Section above, Uber's "UberPool" and Lyft's "Shared" carpool services could be promoted as not only a way to help form high-occupancy vehicle trips, but to also help users save money. When users form these shared carpools, each member of the pooled trip pays an equitable share of the trip cost, thereby making a single-occupancy rideshare trip less affordable and less attractive. Airports are looking at options related to incentivizing and/or requiring these types of services to address curb front congestion and increased environmental impacts from additional car trips.

3.2.8.3. Additional Mobility-related Initiatives

Enhancing intermodal integration and improving access to public transportation options provides the additional benefit of lowering carbon emissions associated with single occupancy vehicle travel and vehicle idling when traveling through congested areas of the roadway network. Furthering the sustainability benefits of providing an optimized multimodal transportation system and recognizing the technological advancements that have occurred in recent years, the CDOT Office of Innovative Mobility is working on an Emerging Mobility Impact Study in compliance with Senate Bill (SB) 19-239: Address Impacts of Transportation Changes. To address the technology and business model changes related to commercial vehicles, this bill requires that CDOT form a Stakeholder Working Group (SWG) with the following key responsibilities:[12]

- Quantify carbon emissions produced by motor vehicles used for commercial purposes and provide strategies on how to reduce those emissions
- Identify infrastructure needs to support zero emission vehicles and increased use of the new technologies and business models
- Identify potential fees to mitigate the impacts of new technologies and business models in the transportation industry and to incentivize zero emission vehicles and multi-passenger ride-sharing opportunities

During the summer of 2019, the SWG met to consider policy options, with the CDOT and Colorado Energy Office providing modeling support. By November 1, 2019, the SWG will present a report of policy recommendations and priorities. By October 1, 2020, CDOT will promulgate rules to the extent necessary to effectively implement SB 19-239.

Additionally, CDOT is committed to integrating safety into all aspects of agency operations, from employee behavior to planning, design, construction, and maintenance through its Whole System Whole Safety initiative. This program takes a systematic, statewide approach to reduce the rate and severity of crashes and improve safety conditions for all modes of transportation, including air travel.

3.2.8.4. Promotion of Non-Hub or Basic Commercial Service Airports

Colorado is a unique state due to its geographical and topographical diversity. The Rocky Mountains that cut the state in half longitudinally create unique mobility challenges as roadways typically wander around, over, and through steep mountain terrain. Communities in the mountainous half of the state may be close to another community geographically but requires a much longer vehicular trip than would normally be expected. Winter weather often compounds the travel time required to make similar trips, especially if a mountain pass must be crossed along the route.

In these types of scenarios, the public and visitors often overlook the availability of smaller commercial service airports (defined as all except Denver International and Colorado Springs Municipal) that make connecting to other parts of the state and country faster and more convenient. Use of these airports could also help to reduce the number of vehicles on already congested roadways (I-70 for example).

[12] The text of the SB is available online at https://leg.colorado.gov/bills/sb19-239 (accessed September 2019).

Colorado's smaller commercial service airports are shown in **Table 3.5**. Depending on the season, most of these airports provide daily regional flights to Denver as well as non-stop flights to other major U.S. markets. Given the tourist nature of many parts of Colorado, there are more robust flight schedules available during the winter (December – May) and summer (June – September) months to serve outdoor recreation demand, depending on the airport community's prime season. Per the U.S. General Services Administration's published per diem rates, much of the winter lodging demand is pointed at resort communities like Vail, Aspen, and Telluride. Contrastingly, higher summer lodging demand is seen in Boulder, Colorado Springs, Cortez, Durango, and Steamboat Springs.[13]

Table 3.5. Non-Hub and Basic Commercial Service Airports and Available Air Carriers

Associated City	Airport	Available Air Carriers
Alamosa	San Luis Valley Regional	Boutique Air
Aspen	Aspen-Pitkin County	American, Delta, United
Cortez	Cortez Municipal	Boutique Air
Durango	Durango-La Plata County	American, United
Eagle	Eagle County Regional	American, Delta, United
Fort Collins/Loveland	Northern Colorado Regional	Charter Only
Grand Junction	Grand Junction Regional	Allegiant, American, Delta, Denver Air Connection, United
Gunnison	Gunnison-Crested Butte Regional	American, United
Hayden	Yampa Valley	Alaska, American, Delta, JetBlue, United
Montrose	Montrose Regional	Allegiant, American, Delta, United
Pueblo	Pueblo Memorial	United
Telluride	Telluride Regional	Boutique Air, Denver Air Connection

Source: Individual airport websites, accessed April 2019

3.2.9. Summary

Colorado is a unique state with unique accessibility and intermobility challenges and opportunities. However, the state enjoys a robust, albeit stressed, roadway network and multiple transit options that extend outwards to link more rural parts of the state. Coordinated planning efforts between airports and communities will ensure that appropriate improvements to the existing transportation and aviation systems will further enhance airport access and multimodal integration with communities and statewide.

3.3. Environmental Context

As noted in the introduction above, the FAA included consideration of environmental conditions as a component of aviation system plans in its most recent system planning AC, 150-5070-7, change 1, *The*

[13] U.S. General Services Administration per diem rates were pulled in April of 2019 from https://www.gsa.gov/

Airport System Planning Process. The purpose of including environmental conditions is to identify potential environmental concerns early in the planning process. This overview of environmental conditions and considerations utilizes existing readily available information provided by airports and the FAA, as well as data from other online resources to identify obvious and known environmental features that may be considered sensitive or have the potential to impact future airport development.

The basis for determining the categories of environmental concerns were those contained in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions*. These documents provide detailed guidance on how airports can establish compliance with the National Environmental Policy Act (NEPA) and implementing regulations issued by the Council on Environmental Quality (CEQ). These orders delineate specific environmental impact categories to be addressed for NEPA and CEQ compliance. This section of the CASP is not designed to be NEPA-compliant, but instead provides an initial framework for future evaluations conducted at the airport-specific level. Accordingly, this section outlines notable environmental considerations that are of particular importance to Colorado airports including:

- Air quality
- Biological resources
- U.S. Department of Transportation (DOT) Section 4(f) lands
- Farmlands
- Hazardous materials, solid waste, and pollution prevention
- Historical, architectural, archaeological, and cultural resources
- Land use
- Water resources

A discussion of each consideration and the potential for impacts to Colorado airports are presented below. Each section also includes an example of a Colorado airport that has identified the environmental consideration as an issue of concern in its master plan or other planning document. A summary table of the potential environmental issues of concern identified at all Colorado system airports is provided at the end of this section (**Table 3.10**). This table summarizes issues reported in airports' most recent master plans and as reported in the 2018 Inventory & Data Form collected during the CASP inventory process.

In Colorado, aerial wildland firefighting is an important tool to contain wildland fires and protect natural and manmade resources. The Center of Excellence for Advanced Technology Aerial Firefighting (CoE), located at Rifle-Garfield County (RIL) is a quasi-independent research center to evaluate existing and new technologies that support the state's aerial wildland fighting efforts. Research projects demonstrate the wide range of contributions CoE is making to improve the state's capability for fighting wildfires. The airport, higher education institutions, state and federal government agencies, and business partners around the state are strong supporters of CoE and its research contributions to effective firefighting in Colorado.

3.3.1. Air Quality

Through the Clean Air Act of 1970 (CAA), the U.S. Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) for six common air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2), and lead (Pb). As the federal agency charged with managing issues related to air quality, the EPA regulates these six pollutants to permissible levels through enforcement of the NAAQS. Areas of the U.S. and its associated territories with ambient concentrations of the criteria pollutants that exceed the NAAQS are considered to not be in attainment of the NAAQS and are therefore designated as "nonattainment areas." For each nonattainment area, states must develop an EPA-approved State Implementation Plan (SIP) that outlines regulations, programs, and measures to be used to attain and maintain the NAAQS within the timeline established by the CAA. When a nonattainment area attains the NAAQS, it is then designated as a "maintenance area" to ensure continued adherence with the SIP. Maintenance status can last up to 20 years before an area is re-designated as attainment.

Table 3.6 outlines the maintenance areas within Colorado for CO and Particulate Matter-10 (PM-10).[14]

Table 3.6. Colorado Air Quality Maintenance Areas

Area	NAAQS	Designated as Nonattainment	Re-designation to Maintenance
Colorado Springs	Carbon Monoxide (1971)	11/15/1990	10/25/1999
Denver-Boulder	Carbon Monoxide (1971)	11/15/1990	1/14/2002
Fort Collins	Carbon Monoxide (1971)	11/15/1990	9/22/2003
Greeley	Carbon Monoxide (1971)	11/15/1990	5/10/1999
Longmont	Carbon Monoxide (1971)	11/15/1990	11/23/1999
Adams, Denver, Boulder Counties	Particulate Matter-10 (1987)	11/15/1990	10/16/2002
Archuleta County; Pagosa Springs	Particulate Matter-10 (1987)	11/15/1990	8/14/2001
Fremont County; Canon City Area	Particulate Matter-10 (1987)	11/15/1990	7/31/2000
Pitkin County; Aspen	Particulate Matter-10 (1987)	11/15/1990	7/14/2003
Prowers County; Lamar	Particulate Matter-10 (1987)	11/15/1990	11/25/2005
Routt County; Steamboat Springs	Particulate Matter-10 (1987)	1/20/1994	11/24/2004
San Miguel County; Telluride	Particulate Matter-10 (1987)	11/15/1990	8/14/2001

Source: U.S. EPA, 2019

[14] Additional details about all non-attainment areas in Colorado are available at www3.epa.gov/airquality/urbanair/sipstatus/reports/co_areabypoll.html

The Denver Metro/North Front Range region is the only nonattainment area in Colorado in terms of Ozone, which is not in attainment of 2015 eight-hour ozone standards with a designation of nonattainment in August 2018 (see **Figure 3.12**).[15] This region contains all of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties, as well as part of Larimer and Weld counties. According to the NAAQS, eight-hour ozone standards are measured by taking the fourth-highest daily maximum eight-hour ozone level averaged over three years. It should be noted that this designation of nonattainment started in 2004 based on 1997 eight-hour ozone standards. In November 2007 (Federal Fiscal Year 2008), the region's designation changed to "marginal" nonattainment for the same standard. In 2015 the EPA changed the ozone standard to the current eight-hour ozone standard of 70 parts per million. In early 2016, the region's status was moved from "marginal" to "moderate" based on the 2008 standard.

To ensure federal agencies uphold the objectives of the CAA, help maintain the NAAQS, and remain compliant with SIPs, proposed airport actions and development at federally funded airports within nonattainment and/or maintenance areas require an air quality analysis. Known as the General Conformity Rule, this requirement is designed so that aviation-related activities do not contribute to a new violation of the NAAQS, worsen existing violations, or delay attainment of the NAAQS. Airports within non-attainment areas must also prepare an Airport Emissions Inventory to be included in their area's SIP. This can be challenging and difficult to quantify, as airports emissions come from a variety of sources that include aircraft engines and auxiliary power units, as well as various types of powered ground support equipment. To help airports in this process and comply with the General Conformity Rule, the Airport Cooperative Research Program (ACRP) developed Report 84: *Guidebook for Preparing Airport Emissions Inventories for SIPs* (2013). Airports located in the counties that compose the Denver Metro/North Front Range nonattainment area are as follows:

- Adams - Colorado Air and Space Port (CFO)
- Arapahoe - Centennial (APA)
- Boulder - Boulder Municipal (BDU), Vance Brand (LMO)
- Denver - Denver International (DEN)
- Douglas - None
- Jefferson - Rocky Mountain Metropolitan (BJC)
- Larimer – Northern Colorado Regional (FNL)
- Weld – Erie Municipal (EIK), Greeley-Weld County (GXY)

While none of the airports noted a specific air quality concern that has impacted development to date, it is likely that any large redevelopment programs might have to be phased to fit within air quality standards as outlined in a SIP. Furthermore, air quality issues in this region may worsen as aviation demand rises in association with the area's economic and population growth through the coming decades.

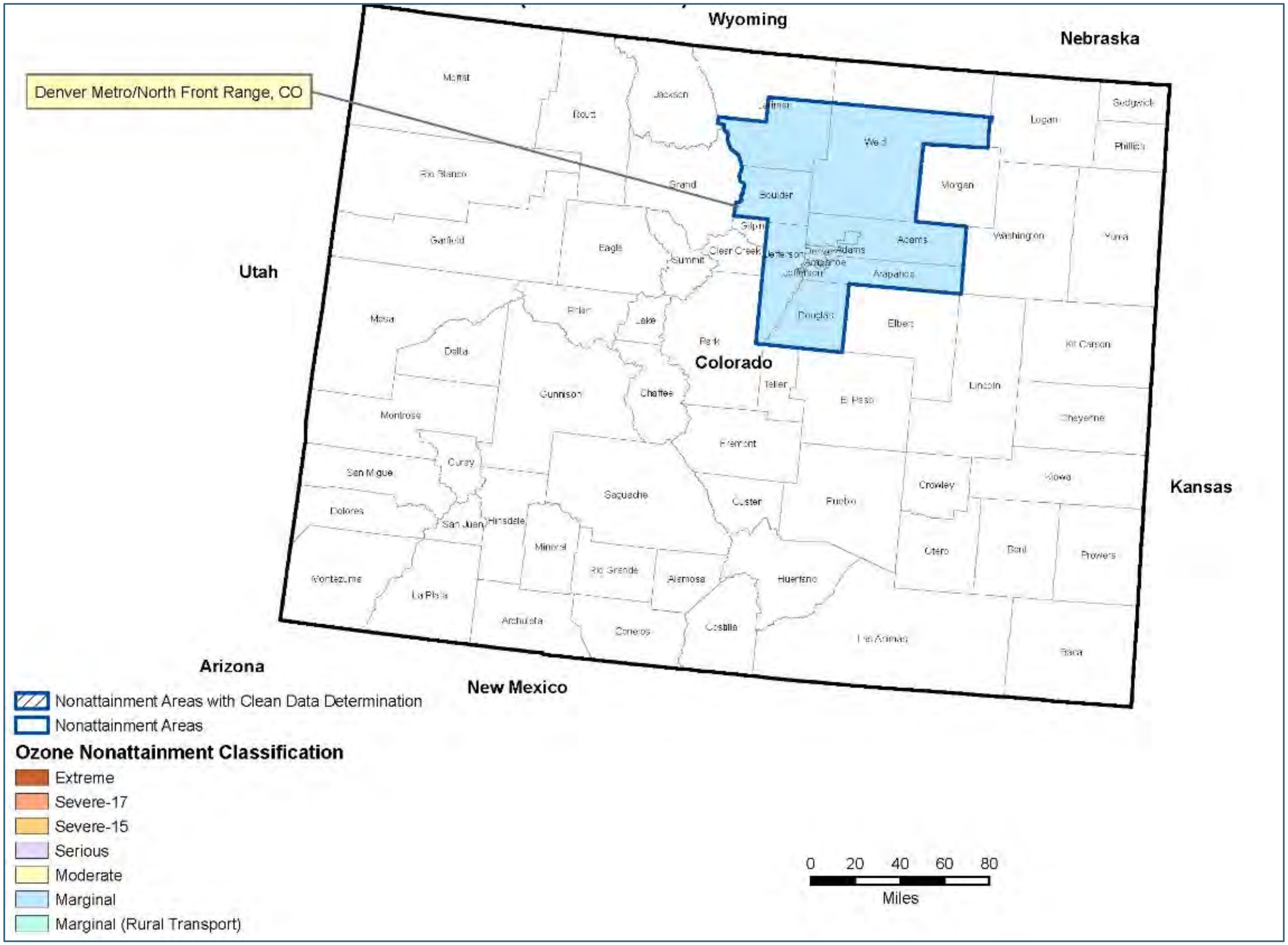
[15] FAA. (2019). Colorado Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Available at https://www3.epa.gov/airquality/greenbook/anayo_co.html (accessed June 2019).

In addition to the requirements that are specific to airports in nonattainment and/or maintenance areas, an air quality analysis may also be required for NEPA purposes in the following cases:

- General aviation airports with a total of 180,000 or more annual general aviation and air taxi operations
- Commercial service airports with more than 1.3 million annual enplanements
- Proposed projects that would increase automobile traffic congestion at off-airport road intersections to a level of service of D, E, or F

For more information on air quality policies and procedures, airports should also consult FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions.* Other ACRP resources pertaining to airports and air quality include ACRP Report 11: *Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*, Report 71: *Guidance for Quantifying the Contribution of Airport Emissions to Local Air Quality*, and Project 02-33: *Guidance for Estimating Airport Construction Emissions*.

Figure 3.12. Colorado Eight-hour Ozone Nonattainment Areas (2015 Standard)



Source: EPA Green Book, 2018

3.3.2. Biological Resources

Biological resources refer to the flora (plants) and fauna (fish, birds, mammals, reptiles, amphibians, etc.) of an area. These resources are valued for their aesthetic, economic, recreational, and environmental benefits. Numerous federal laws regulate and protect biological resources, including the Endangered Species Act (ESA), Fish and Wildlife Coordination Act, and Magnuson-Stevens Fishery Conservation and Management Act, among others. These regulations require consultations, permits, and/or authorizations for actions that could potentially impact biological resources.

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the most commonly applicable regulation when determining potential impacts on biological resources in consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA. An ESA Section 7 consultation ensures that any federally authorized or funded action that may affect threatened or endangered species does not jeopardize the species' continued existence or result in destruction of the species' habitat. Additionally, the Colorado Revised Statutes (CRS) Title 33 – Parks and Wildlife, Article 2 – Nongame and Endangered Species Conservation provides state-level regulations related to biological resources.

The master plans of 29 system airports included sections addressing specific concerns related to biological resources and endangered species. The Colorado Springs Municipal Airport Master Plan (2013) identified multiple threatened or endangered species, such as the Western burrowing owl, Mexican spotted owl, Ferruginous hawk, mountain plover, piping plover, and interior least tern as observed on the airport's property.[16] Additionally, the master plan noted that the Colorado Natural Heritage Program identified the airport as a Potential Conservation Area due to the presence of the largest known area of a Big Bluestem/Sandreed Tall Grass prairie in Colorado. To address these biological resource concerns, airport management created Designated Open Space parcels to ensure that the prairie ecosystem located on airport property would be minimally impacted by future development.

Table 3.7 lists the threatened and endangered species recognized by the federal and Colorado state governments. The table also denotes the Tier 1 Species of Greatest Conservation Need (SGCN) reported in Colorado's 2015 State Wildlife Action Plan (SWAP), a federally mandated plan prepared by Colorado Parks and Wildlife (CPW) (these species are denoted with a single asterisk).[17,18] Tier 1 SGCN are of highest conservation priority in the state, although some species are not currently included on state and federal threatened and endangered species lists. In these cases, the agency(ies) that do recognize them as species of concern are noted.

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[16] Colorado Springs. (2013). Airport Master Plan. p. 7-5. Available online at coloradosprings.gov/sites/default/files/airport/files/COS_Master_Plan/cos_mp-finaltechnicalreportvol_1.pdf (accessed June 2019).

[17] The Department of the Interior and Related Agencies Appropriations Act of 2002, Public Law [PL] 107-63, Title 1, mandates that each state prepare and adopt a SWAP to remain eligible for the State Wildlife Grants program (SWG).

[18] CPW. (2015). *Colorado's 2015 State Wildlife Action Plan.* Available online at cpw.state.co.us/aboutus/Pages/StateWildlifeActionPlan.aspx (accessed June 2019).

Table 3.7. Colorado's Key Threatened and Endangered Wildlife Species

Common Name	Scientific Name	Status**
Amphibians		
Boreal toad*	*Bufo boreas boreas*	SE, USFS, BLM
Couch's spadefoot	*Scaphiopus couchii*	SC
Great plains narrowmouth toad	*Gastrophryne olivacea*	SC
Northern cricket frog	*Acris crepitans*	SC
Northern leopard frog*	*Rana pipiens*	SC, USFS, BLM
Plains leopard frog	*Rana blairi*	SC
Wood frog	*Rana sylvatica*	SC
Birds		
American Peregrine falcon	*Falco peregrinus anatum*	SC
Bald eagle	*Haliaeetus leucocephalus*	SC
Brown-capped rosy finch*	*Leucosticte australis*	USFWS
Burrowing owl*	*Athene cunicularia*	ST, USFS, BLM
Columbian sharp-tailed grouse*	*Tympanuchus phasianellus columbianus*	SC, USFS, BLM
Ferruginous hawk	*Buteo regalis*	SC
Golden eagle*	*Aquila chrysaetos*	USFWS
Greater sage grouse*	*Centrocercus urophasianus*	SC, USFS, BLM
Greater sandhill crane*	*Grus canadensis tabida*	SC
Gunnison sage grouse*	*Centrocercus minimus*	FT, SC
Least tern	*Sterna antillarum*	FE, SE
Lesser prairie chicken*	*Tympanuchus pallidicinctus*	LT, ST, BLM, USFWS
Long-billed curlew	*Numenius americanus*	SC
Mexican spotted owl	*Strix occidentalis lucida*	FT, ST
Mountain plover*	*Charadrius montanus*	SC, USFS, BLM
Plains sharp-tailed grouse*	*Tympanuchus phasianellus jamesii*	SE
Piping plover	*Charadrius melodus circumcinctus*	FT, ST
Southwestern willow flycatcher*	*Empidonax traillii extimus*	FE, SE, USFWS
Southern white-tailed ptarmigan*	*Lagopus leucura altipetens*	USFS
Western snowy plover	*Charadrius alexandrinus*	SC
Western yellow-billed cuckoo*	*Coccyzus americanus*	SC, USFWS
Whooping crane	*Grus americana*	FE, SE
Fish		
Arkansas darter*	*Etheostoma cragini*	ST, BLM
Bueheaded sucker*	*Catostomus discobolus*	USFS, BLM
Bonytail chub*	*Gila elegans*	FE, SE
Brassy minnow*	*Hybognathus hankinsoni*	ST
Colorado pikeminnow*	*Ptychocheilus lucius*	FE, ST
Colorado River cutthroat trout*	*Oncorhynchus clarki pleuriticus*	SC, USFS, BLM
Colorado roundtail chub	*Gila robusta*	SC

Common Name	Scientific Name	Status**
Common shiner*	*Luxilus cornutus*	ST
Flannelmouth sucker	*Catostomus latipinnis*	USFS, BLM
Flathead chub*	*Platygobio gracilus*	SC, USFS
Greenback cutthroat trout*	*Oncorhynchus clarki stomias*	FT, ST
Humpback chub*	*Gila cypha*	FE, ST
Iowa darter	*Etheostoma exile*	SC
Lake chub	*Couesius plumbeus*	SE
Mountain sucker*	*Catostomus playtrhynchus*	SC, USFS, BLM
Northern redbelly dace*	*Phoxinus eos*	SE, USFS
Orangespotted sunfish*	*Lepomis humilis*	-
Plains minnow*	*Hybognathus placitus*	SE, USFS
Plains topminnow	*Fundulus sciadicus*	USFS
Plains orangethroat darter	*Etheostoma spectabile*	SC
Razorback sucker*	*Xyrauchen texanus*	FE, SE
Rio Grande chub*	*Gila pandora*	SC, USFS, BLM
Rio Grande cutthroat trout*	*Oncorhynchus clarki virginalis*	SC, USFS, BLM
Rio Grande sucker*	*Catostomus plebeius*	SE, USFS, BLM
Southern redbelly dace*	*Phoxinus erythrogaster*	SE, USFS, BLM
Stonecat	*Noturus flavus*	SC
Suckermouth minnow	*Phenacobius mirabilis*	SE
Mammals		
America pika*	*Ochotona princeps*	-
Black-footed ferret*	*Mustela nigripes*	FE, SE
Black-tailed prairie dog	*Cynomys ludovicianus*	SC
Botta's pocket gopher	*Thomomy bottae rubidus*	SC
Fringed myotis*	*Myotis thysanodes*	USFS, BLM
Gray wolf	*Canis lupus*	FE, SE
Grizzly bear	*Ursus arctos*	FT, SE
Gunnison's prairie dog*	*Cynomys gunnisoni*	USFS, BLM
Kit fox	*Vulpes macrotis*	SE
Little brown myotis*	*Myotis lucifigus*	-
Lynx*	*Lynx canadensis*	FT, SE
New Mexico meadow jumping mouse	*Zapus hudsonius luteus)*	USFS, BLM
Northern pocket gopher	*Thomomys talpoides macrotis*	SC
Olive-backed pocket mouse*	*Zapus hudsonius luteus*	USFS, BLM
Preble's meadow jumping mouse*	*Zapus hudsonius preblei*	FT, ST
River otter	*Lontra canadensis*	ST
Spotted bat*	*Euderma maculatum*	USFS, BLM
Swift fox	*Vulpes velox*	SC
Townsend's big-eared bat*	*Corynorhinus townsendii pallescens*	SC, USFS, BLM
Wolverine*	*Gulo gulo*	SE

Common Name	Scientific Name	Status**
	Reptiles	
Colorado checkered whiptail*	Aspidoscelis neotesselata	SC
Common garter snake	Thamnophis sirtalis	SC, USFS, BLM
Common king snake	Lampropeltis getula	SC
Longnose leopard lizard	Gambelia wislizenii	SC
Massasauga*	Sistrurus catenatus	SC
Midget faded rattlesnake	Crotalus viridis concolor	SC
Roundtail horned lizard	Phrynosoma modestum	SC
Texas blind snake	Leptotyphlops dulcis	SC
Texas borned lizard	Phrynosoma cornutum	SC
Triploid checkered whiptail	Cnemidophorus neotesselatus	SC
Yellow mud turtle	Kinosternon flavescens	SC
	Mollusks	
Rocky Mountain capshell	Acroloxus coloradensis	SC
Cylindrical papershell	Anodontoides ferussacianus	SC

**Note: Denotes Tier 1 SGCN.*

***Note: Status Acronyms: FE: Federally Endangered, FT: Federally Threatened, SE: State Endangered, ST: State Threatened, SC: State Special Concern (not a statutory category), BLM: Bureau of Land Management, USFS: U.S. Forest Service, USFWS: U.S. Fish and Wildlife Service.*

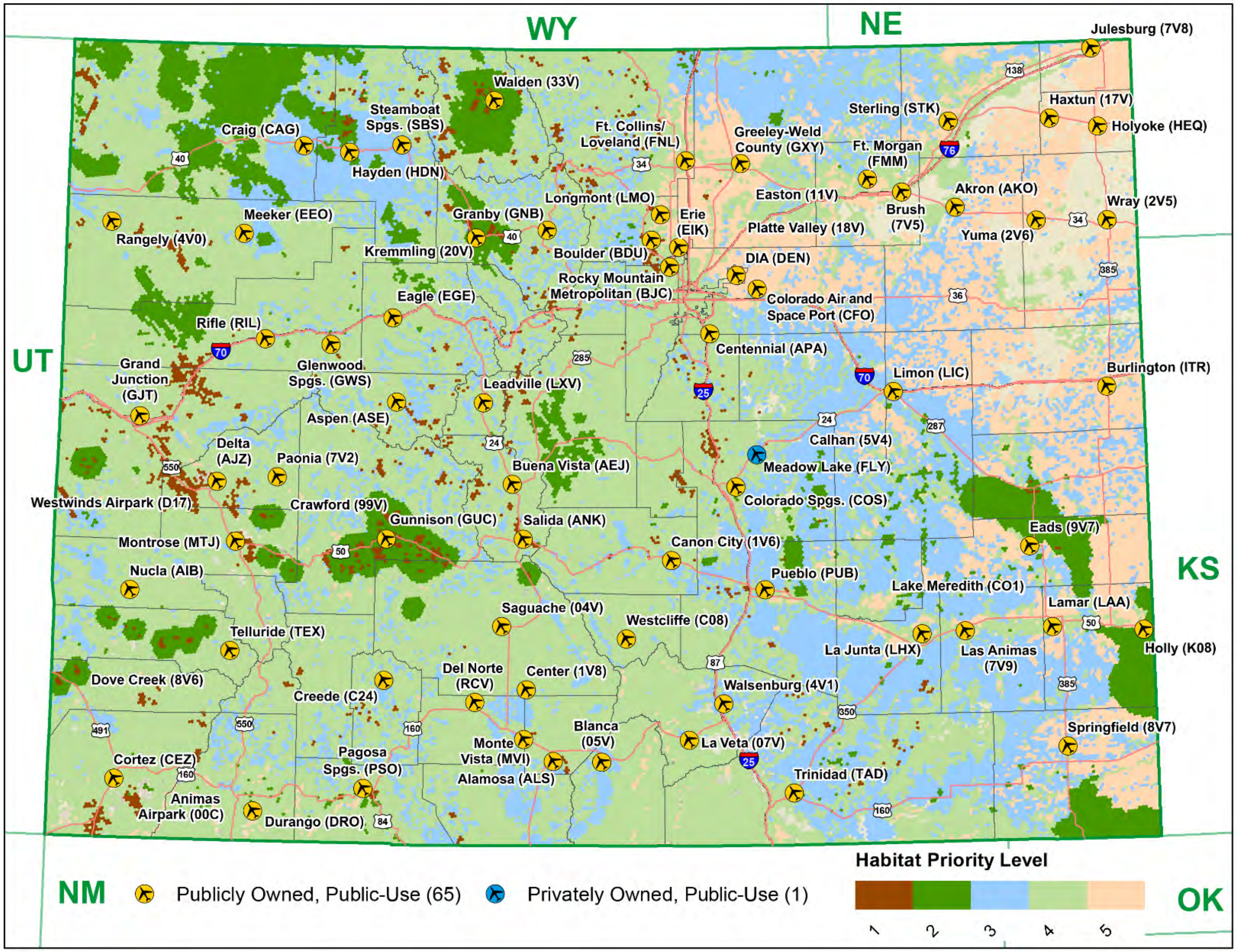
Sources: CPW, 2015, 2019

Figure 3.13 depicts the critical habitats of Colorado's most threatened and endangered species. These areas contain the resources necessary for the survival and reproduction of wildlife including food, water, shelter, and movement corridors. Critical habitats have been established to prevent unacceptable declines in existing populations, facilitate future recovery efforts, or protect ecological systems with high biological diversity value.[19] Ranked on a scale from one to five, priority areas represent those habitats and wildlife corridors that are rare, fragile, and essential to achieving species' viability and biodiversity.

As shown, several of Colorado's airports are surrounded by habitat priority levels one and two including Gunnison-Crested Butte Regional (GUC), Walden-Jackson County (33V), and Mc Elroy Airfield in Kremmling (20V). The Gunnison-Crested Butte Regional (GUC) sits within the USFWS-designated critical habitat for the Gunnison sage grouse, a ground-dwelling bird found only in Colorado and southeastern Utah. Because the Gunnison sage grouse is listed as federally threatened, the airport would be required to obtain a Section 10 permit under the ESA for any federally funded action that could result in a take.[20] While routine maintenance is not federally funded and thus excluded from Section 10 permitting, some routine activities conducted as part of an airport improvement project could be impacted. Mowing sage brush habitat, for example, is considered likely to result in a take and would require a Section 10 permit if conducted as part of a federally funded project.

[19] Ibid. p. 400.
[20] Jviation. (2014). Gunnison-Crested Butte Airport Regional Airport Master Plan. p. 6-2.

Figure 3.13. Colorado Priority Habitats



Sources: CPW, 2015; Kimley-Horn, 2019

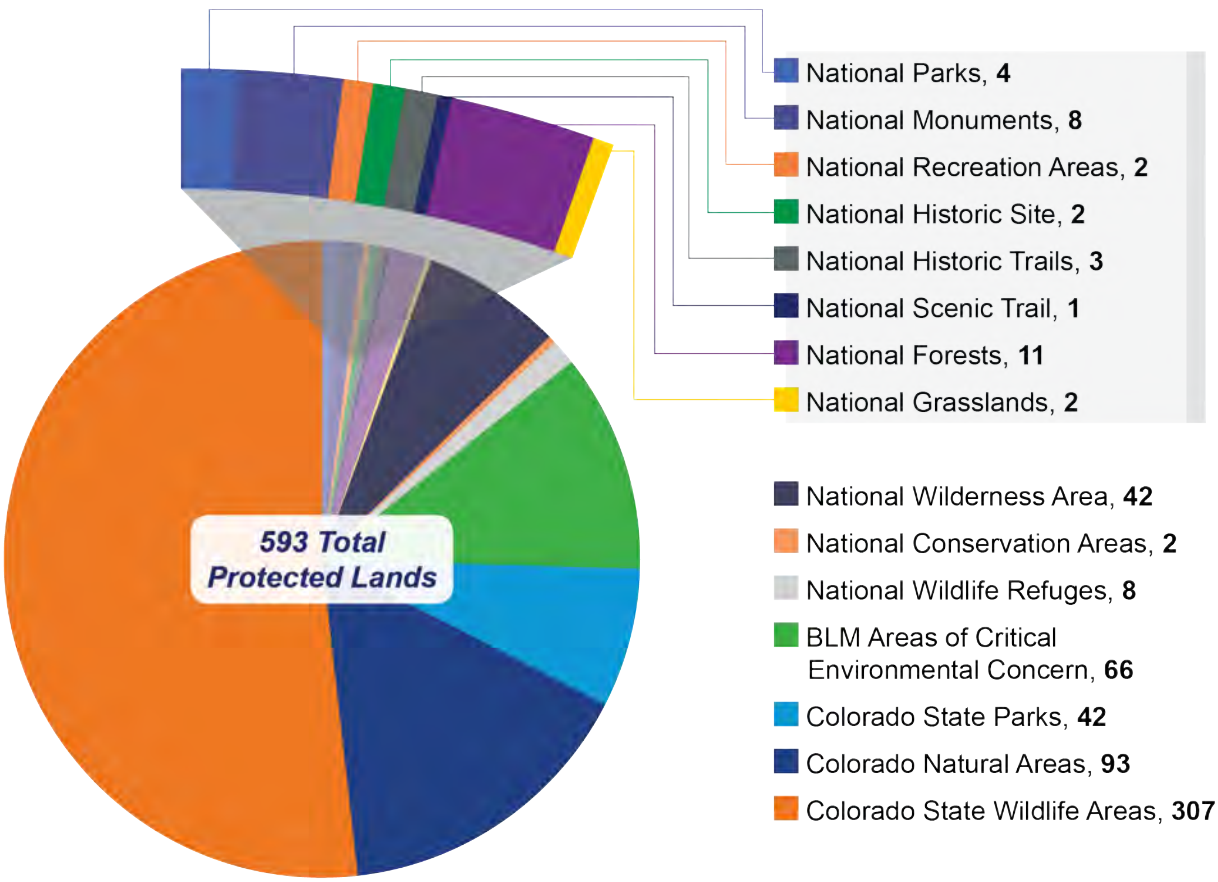
In addition to state- and federally-recognized threatened and endangered species, airports must also be cognizant of other wildlife species on or near airport property. All wildlife—such as birds, ungulates like deer and elk, and reptiles—can present serious safety risk to airport operations on the ground and in the air. While airport fencing is the primary means of preventing wildlife from entering the airfield, not all wildlife can be kept out with fencing, nor does every airport in the system employ a full perimeter wildlife fence. Because animals are attracted to areas that reflect their natural habitat or areas that provide food and water, airports can control their land use and landscaping to minimize potential animal attractants.

Airports can also perform wildlife hazard site visits to understand what potential threats exist for their airport or develop Wildlife Hazard Assessments (WHAs) or Wildlife Hazard Management Plans (WHMPs) to develop a strategy for mitigating against these hazards. The FAA requires that Part 139-certified airports conduct a WHA when certain qualifying events occur, such as when an air carrier experiences multiple or substantial wildlife strikes. The FAA then uses the WHA to determine if the airport is required to develop a more extensive WHMP based on the level of risk identified at the facility. **Chapter 2. Inventory of System Conditions** provides additional information about airports in Colorado with wildlife fencing and WHAs.

3.3.3. DOT Section 4(f)

Section 4(f) of the United States DOT Act of 1966, 49 United States Code (USC) Section 303(c), provides that the Secretary of Transportation will not approve a transportation program or project that requires the use of publicly-owned land from a park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land from an historic site of national, state, or local significance unless there is no feasible or prudent alternative or the DOT determines the use of the property will have minimal impact. If such a program or project is approved, it must include all possible planning to minimize harm resulting from the use. As shown in **Figure 3.14**, Colorado hosts various types of federally- and state-protected land, with 593 major protected lands in the state. Approximately 43 percent of total land in Colorado is owned by a public entity.

Figure 3.14. Number of Major State and Federal Lands in Colorado



Source: Kimley-Horn, 2019

This information does not encompass the numerous local parks and recreation areas that may qualify as Section 4(f) properties. Therefore, before beginning any airport improvement program or project, it is important that Colorado airports coordinate with the appropriate local, state, and federal authorities to determine if there are any Section 4(f) properties within the vicinity of the airport. If so, it is incumbent to then determine potential impacts the proposed program or project may have on those properties.

According to review of 66 Colorado public-use airport master plans, five airports noted specific concerns related to DOT Section 4(f) properties. Of these, the 2014 Eagle County Regional Airport Master Plan noted that 17 community parks and recreational areas were located near the airport. A neighborhood park located on Quail Run Circle approximately 1,500 feet from the Runway 07 threshold is an issue of particular concern. Several other parks and recreation areas, such as Gypsum Estates Park, Gypsum Sports Complex, Town Hall Park, Gypsum Recreation Center, and the Lundgren Theater, are also located within one mile of the airport. Although it is not anticipated that any recommended airport development projects would affect these facilities, future changes in airport operations could potentially cause impacts on the parks.

3.3.4. Farmlands

The Farmland Protection Policy Act (FPPA) of 1981 allows the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) to regulate and prevent federal actions that may result in the unnecessary or irreversible conversion of important farmland to non-agricultural uses. As defined by the FPPA, important farmland includes "all land that is defined as prime, unique, or statewide or locally important." These are defined by the NRCS as follows:

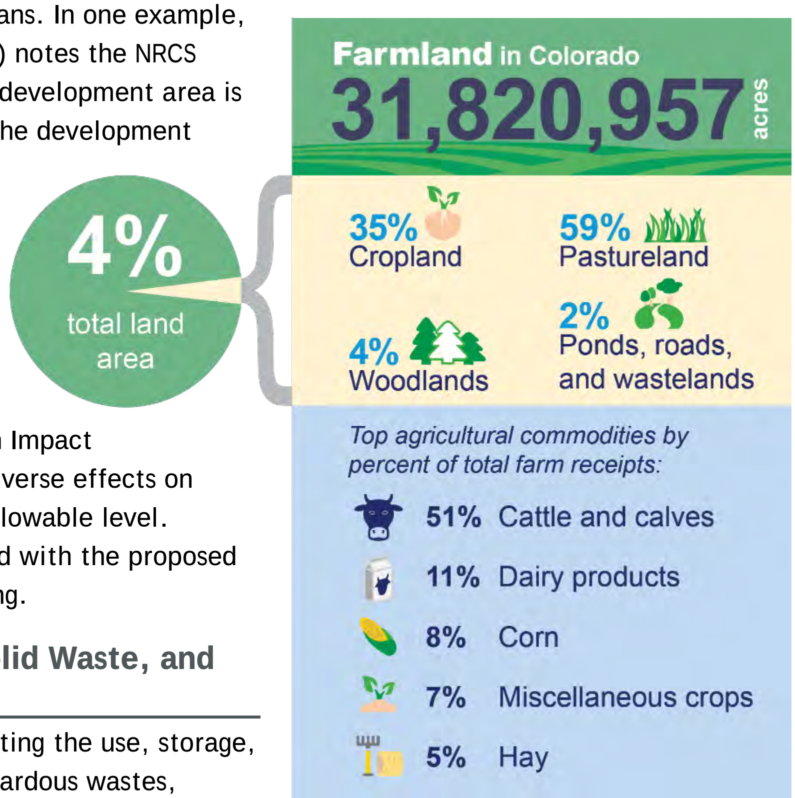
- Prime farmland. Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses.
- Unique farmland. Land other than prime farmland that is used to produce specific high-value food and fiber crops.
- Farmland of statewide importance. This is land, in addition to prime and unique farmlands, that is of statewide importance to produce food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate state agency or agencies.
- Farmland of local importance. In some local areas, there is concern for certain additional farmlands to produce food, feed, fiber, forage, and oilseed crops, even though these lands are not identified as having national or statewide importance. Where appropriate, these lands are to be identified by the local agency or agencies concerned.

Projects are subject to FPPA requirements if they irreversibly convert farmland to nonagricultural uses and are completed by or with assistance from a federal agency. Farmland subject to FPPA requirements does not have to be currently used for cropland; it can also include forest/woodlands, pasturelands, and other land, but not water or previously developed urban land. According to the Economic Research Service (ERS) of the USDA, 31,820,957 acres of the state is farmland, representing approximately four percent of the total land area (2017 data). As shown in **Figure 3.15,** 35 percent is characterized as cropland, four percent for woodlands, and 59 percent for pastureland; The remaining land has already been developed or given over to ponds, roads, or wastelands. Fifty-four percent of cropland is harvested, four percent is used for pasture, and the remaining area is uncultivated. Colorado's top agricultural commodities are cattle and calves, representing 51 percent of the state's total farm receipts, followed by dairy products (11 percent), corn (8 percent), miscellaneous crops (7 percent), and hay (5 percent).[21]

[21] USDA ERS. (2017). State Fact Sheets: Colorado. Available online at data.ers.usda.gov/reports.aspx?StateFIPS=08&ID=17854 (accessed 4 June 2019).

Fifteen airports in Colorado addressed specific concerns related to farmland in their master plans. In one example, the Rangely Airport Master Plan (2016) notes the NRCS determined that a 264-acre proposed development area is considered prime farmland. Because the development would require federal money, the airport would be required to conduct a land use evaluation and site assessment with the NRCS to establish the project's farmland conversation impact rating score. The score is then reported on NRCS Form AD-1006, Farmland Conversation Impact Rating, which indicates if potential adverse effects on farmland exceed the recommended allowable level. Rangely Airport has not moved forward with the proposed development at the time of this writing.

Figure 3.15. Farmland in Colorado



3.3.5. Hazardous Materials, Solid Waste, and Pollution Prevention

The three primary federal laws regulating the use, storage, transportation, and/or disposal of hazardous wastes, substances, and materials are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Community Environmental Response Facilitation Act (CERFA), and the Resource Conservation and Recovery Act (RCRA). These statutes establish the following definitions:

- Solid waste. Defined by RCRA as any discarded material that meets certain requirements and includes items such as garbage, scrap metal, chemical by-products, and sludge from industrial facilities and wastewater treatment plants.
- Hazardous waste. Defined by RCRA as solid wastes that are ignitable, corrosive, reactive, or toxic. RCRA imposes strict requirements on the handling and disposal of hazardous wastes.
- Hazardous substance. Broadly defined by CERCLA to include substances designated as hazardous by the Clean Water Act, Clean Air Act, the Toxic Substances Control Act, and RCRA. This category does not include petroleum and natural gas products.
- Hazardous material. Defined by the CFRs as any substance or material that poses an unreasonable risk to health, safety, or property when commercially transported including petroleum and natural gas products.

In addition to these federal statutes, facilities must also comply with state and local rules, regulations, ordinances, and other requirements established by the Colorado Department of Public Health and

Environment (CDPHE), Colorado Board of Health, Air Quality Control Commission, Solid and Hazardous Waste Commission, and the Water Quality Control Commission, as well as local jurisdictions.[22]

Airport projects must be reviewed to determine the type and extent of the waste materials that may be generated, disturbed, transported, treated, stored, or disposed of by any development action under consideration. Additionally, on-airport activities may involve the handling, application, and disposal of hazardous substances or materials, such as those conducted by a maintenance, repair, and overhaul (MRO) facility or an aviation-related supply manufacturer. Daily airport operations similarly produce various waste materials and involve the use of toxic materials, such as jet fuel and de-icing chemicals. It is each airport's responsibility to determine the type and extent of waste materials generated by on-airport activities and work with the applicable federal, state, and local authorities to comply with all applicable laws, regulations, and ordinances.

The CDPHE Hazardous Materials and Waste Management Division is generally responsible for regulating hazardous materials and waste management at the state level. At this time, no hazardous waste permitted facilities are located on or adjacent to airport property in Colorado.[23] However, the construction of airport capital improvement projects can generate solid waste that requires special handling. Some construction materials, such as fuel, oil, lubricants, paints, solvents, and concrete-curing compounds, may constitute hazardous substances.

The Aspen-Pitkin County Airport Master Plan (2012) notes that proper practices would need to be implemented during construction and operation of a new fuel facility on the west side of the airfield to reduce the potential release of hazardous materials. The airport would also need to update its Spill Prevention, Control, and Countermeasure (SPCC) plan and Stormwater Pollution Prevention Plan (SWPPP) due to the construction of the facility, as well as the potential expansion of apron space and west-side parallel taxiway.[24] In addition to Aspen-Pitkin County, 14 other Colorado system airports noted specific concerns related to hazardous materials, solid waste, and pollution prevention in their master plans. These concerns are generally associated with the potential creation of waste and/or pollution resulting from airport construction and development projects.

A concern to water quality and related to hazardous substances are the chemicals used for deicing aircraft which is a necessity in Colorado given the winter weather conditions. Depending on the controls in place to collect, contain, recover, and/or treat the wastewaters that contain deicing chemicals, there can be impacts to waterbodies. There are national regulations established by the EPA, referred to as effluent guidelines, that relate to discharging any pollutants and the guidelines are implemented through discharge permits that fall under the National Pollutant Discharge Elimination System (NPDES). In April 2012, the EPA released a rule regarding deicing that applies to "existing and new primary airports with 1,000 or more annual jet departures…that generate wastewater associated

[22] Additional information about hazardous waste management in Colorado is provided at https://www.colorado.gov/pacific/cdphe/hazwaste (accessed 4 June 2019).
[23] CDPHE Hazardous Materials and Waste Management Division. (no date). Colorado Hazardous Waste Permits. Available online at environmentalrecords.colorado.gov/HPRMWebDrawerHM/RecordView/410277 (accessed 5 June 2019).
[24] Barnard Dunkelberg Company. (2012). Master Plan Update: Aspen/Pitkin County Airport. p. 7-16.

with airfield pavement deicing" regarding the types of deicers that can be used.[25] The rule also identified that "new airports with 10,000 annual departures located in cold climate zones are required to collect 60 percent of aircraft deicing fluid after deicing."[26] These guidelines/requirements affect many of Colorado's ski airports, requiring additional costs and consideration of how best to handle deicing operations while still meeting the environmental regulations and promoting an environmentally compatible operation.

Additionally, airport expansion projects can potentially conflict with nearby sites that handle or process hazardous materials or solid wastes. In particular, landfills are a significant wildlife attractant and should not be sited near an airport. FAA AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports,* recommends a separation distance of 5,000 feet between such hazardous wildlife attractants and airports serving piston-powered aircraft and 10,000 feet for turbine aircraft not withstanding more stringent airport-specific needs. For all airports, the FAA recommends five statute miles between the farthest edge of the airport operations area (AOA) and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace. Additional information on this topic is available in AC 150/5200-34A, *Construction or Establishment of Landfills Near Public-use Airports.*

Figure 3.16 depicts the location of all landfills in Colorado with a five-mile buffer and the Colorado system airports. **Table 3.8** lists the airports that may be located within the five-mile buffer zone of a landfill. These facilities should assess if any additional mitigation actions are warranted to reduce the potential for wildlife strikes due to the increased risks associated with proximity to a landfill.

Table 3.8. Potential Airport/Landfill Five-mile Conflicts

Associated City	Airport Name	FAA Identifier	Landfill Name
Aspen	Aspen-Pitkin County	ASE	Pitkin County Solid Waste Center
Burlington	Kit Carson County	ITR	Kit Carson / Burlington SDWS Landfill
Canon City	Fremont County	1V6	Phantom Landfill
Cortez	Cortez Municipal	CEZ	Montezuma County Landfill
Craig	Craig-Moffat	CAG	Moffat County Regional Landfill
Creede	Mineral County Memorial	C24	Mineral County SWDLF Landfill
Delta	Blake Field	AJZ	Adobe Buttes Landfill
Denver	Denver International	DEN	Tower Landfill Inc
Denver	Colorado Air and Space Port	CFO	East Regional Landfill
Eads	Eads Municipal	9V7	Eads SWDS Landfill
Erie	Erie Municipal	EIK	Front Range Landfill Denver Regional Landfill (South)
Fort Morgan	Fort Morgan Municipal	FMM	Morgan County Landfill

[25] EPA. (2012). Fact Sheet: Effluent Guidelines for Airport Deicing Discharges
[26] Ibid.

Associated City	Airport Name	FAA Identifier	Landfill Name
Gunnison	Gunnison-Crested Butte Regional	GUC	Six-Mile Lane Landfill
Holly	Holly	K08	Town of Holly SWDLF Landfill
Julesburg	Julesburg Municipal	7V8	Sedgwick County Landfill
Leadville	Lake County	LXV	Lake County Landfill
Montrose	Montrose Regional	MTJ	Montrose SWDS
Westcliffe	Silver West	C08	Custer County Landfill

Sources: CDPHE, 2019; Kimley-Horn, 2019

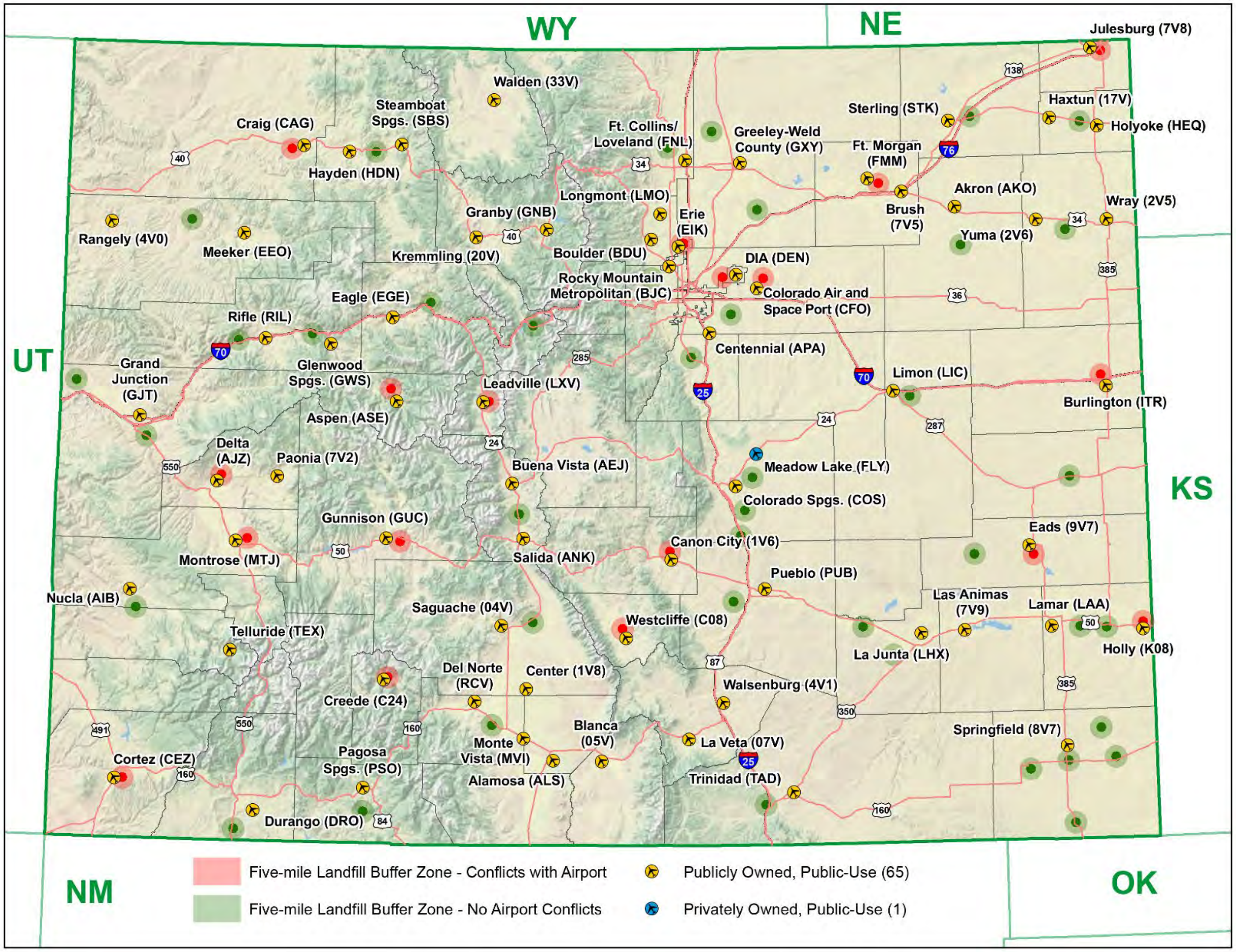
In addition to hazardous waste, substances, or materials generated by certain aviation-related activities and/or airport improvement projects, day-to-day airport operations generate municipal solid waste and construction debris that is typically sent to a landfill. The FAA Modernization and Reform Act of 2012 (FMRA) included two key changes pertaining to the recycling and disposal of this "normal" type of debris:[27]

- FMRA Section 132 (b) expanded the definition of airport planning to include, "developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable state and local recycling laws, including the cost of a waste audit."
- FRMR Section 133 added a provision that requires all federally funded airports that receive grant funding to address issues related to solid waste recycling in new or updated master plans. This content should address the feasibility of solid waste recycling, minimizing the generation of solid waste, operation and maintenance requirements, and a review of waste management contracts.

While many airports already have some type of recycling program in-place, the scope of these programs varies considerably. Accordingly, the FAA's implementation guidance on the inclusion of recycling and waste reduction recognizes the content of each airport's plan must reflect the unique needs of each facility. Airports have several resources available to aid in the development of recycling and waste reduction plans, including the *FAA Synthesis Document: Recycling, Reuse, and Waste Reduction Plans at Airports*; ACRP Report 80: *Guidebook for Incorporating Sustainability into Traditional Airport Projects*; ACRP Report 42: *Sustainable Airport Construction Projects*, and the Sustainable Aviation Guidance Alliance's *Sustainable Aviation Resource Guide.* 20 airports in Colorado reported having a sustainability plan during the airport inventory process.

[27] FAA. (2014). *Memorandum: Guidance on Airport Recycling, Reuse, and Waste Reduction Plans.* Dated September 30, 2014.

Figure 3.16. Five-mile Landfill Buffer Zones Highlighting Conflicts with Colorado System Airports



Sources: CDPHE; Kimley-Horn, 2019

3.3.6. Historical, Architectural, Archaeological, and Cultural Resources

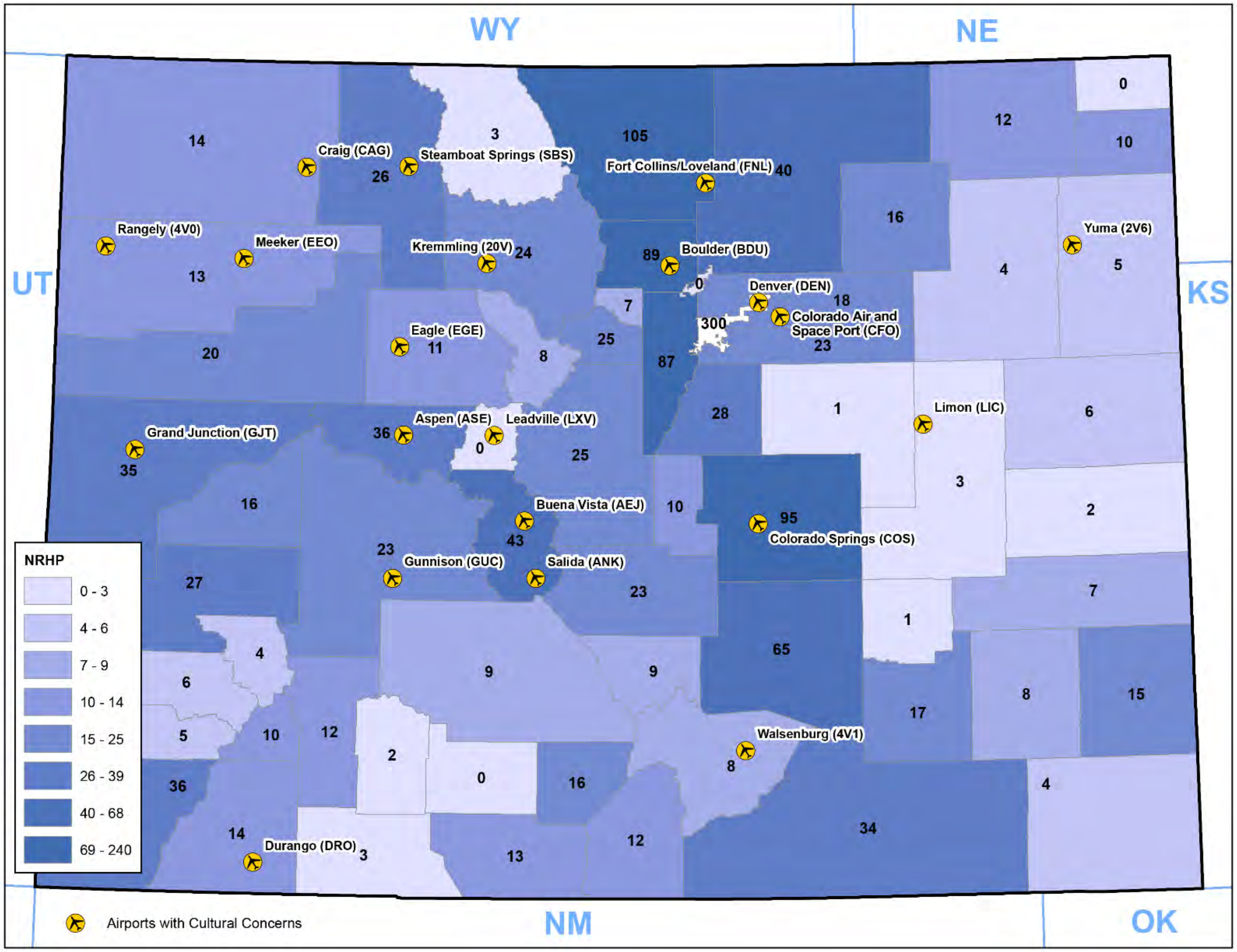
The National Historic Preservation Act of 1966 (NHPA) and the Archaeological and Historic Preservation Act of 1974 primarily regulate and protect historical, architectural, archaeological, and cultural resources at the federal level. These laws protect a range of sites, properties, and physical resources relating to human activities, society, and cultural institutions. These resources can include structures, objects, and districts considered important to culture or community, as well as aspects of the physical environment, natural features, and biota. Section 106 of the NHPA specifically requires federal agencies to consider the effects of their undertakings on properties listed or eligible for listing on the National Register of Historic Places (NRHP). The Colorado State Historic Preservation Office (SHPO) manages the national historic preservation program for Colorado. SHPO is responsible for coordinating with federal agencies and relevant local government representatives during Section 106 reviews.

At the time of this writing, there are 1,543 Colorado sites identified by the NRHP; additional historic places and landmarks are being added on a continuous basis. Denver County has the highest number of sites in the state (300), followed by Larimer (105), El Paso (95), Boulder (89), and Jefferson (87) counties. **Figure 3.17** shows the density of NRHP-listed sites by Colorado county, as well as the 21 airports that reported specific concerns related to historical, architectural, archaeological, and cultural resources in their master plans.

For example, the Harriet Alexander Field (ANK) Airport Master Plan noted that there are three sites currently listed on the NRHP within one mile of the airport (2018).[28] These sites include the Chaffee County Poor Farm (site 5CF190), Fairview Cemetery (site 5CF342), and the Valley View School (site 4CF1598). Additionally, Hutchinson Ranch (site 5CF142), a state-recognized Centennial Farm, is currently being reviewed for potential inclusion in the NRHP.[29]

[28] Burns & McDonnell Engineering Company, Inc. (October 2018). “Harriet Alexander Field Airport Master Plan.” p. 2-44.
[29] The Centennial Farms and Ranches program recognizes the important role that agriculture has played in the state’s history and economic development. To be considered for inclusion in the program, properties must have remained in the same family continuously for at least 100 years, operate as a working farm or ranch, and be a minimum of 160 acres or gross at least $1,000 in annual sales. Additional information about this program is available online at www.colorado.gov/pacific/agmarkets/centennial-farms-program (accessed September 2019).

Figure 3.17. Density of NRHP-listed Sites by County and Airports with Recognized Cultural Concerns



Sources: NRHP, 2019; Airport master plans (various years); Kimley-Horn, 2019

3.3.7. Land Use

Airport compatible land use occurs when the land adjacent to or near an airport can coexist with a nearby airport without constraining the safe and efficient operations of the airport or exposing people to unacceptable levels of noise and safety hazards. Incompatibility can result in undue noise-related nuisance to persons on the ground or safety-related concerns affecting airspace, overflights, and accident severity. It can also result in pressures to limit airport operations, close airports, or restrict access such as displacing runway thresholds, or requiring changes to instrument approach procedures which increase safety for an airport and the community it serves. Cases of airport land use compatibility can arise when previously undeveloped land becomes populated with residential or other incompatible development. In other cases, areas may be redeveloped from a compatible use, such as farmland or industrial use, to an incompatible one, such as a sensitive-use property like a hospital, school, daycare facility, or church.

In addition to the incompatibility associated with land use, other concerns are related to height. 14 CFR Part 77, "Safe, Efficient Use and Preservation of the Navigable Airspace," was enacted to protect navigable airspace and ensure the safety of aircraft. Codified as Federation Aviation Regulation (FAR) Part 77, the regulation establishes specific airspace dimensions as "imaginary surfaces" based on the design criteria of airports that should not be exceeded by objects or structures. Imaginary surfaces are designed to allow aircraft to operate within the airport's traffic pattern and along established approaches and routes into and out of the airport. Part 77 incursions occur when manmade and natural objects penetrate an imaginary surface.

Incompatible land use and Part 77 incursions result in degraded airport operations, increased safety risks, and more limited future economic and airport expansion and modification opportunities.[30] Other impacts include disruption of communities, relocation, induced socioeconomic impacts, and impacts on other public facilities (such as previously discussed regarding DOT Section 4(f) properties). To mitigate these issues, federal and state authorities have enacted legislation specifically addressing land use controls and Part 77 surfaces. 49 USC Section 47107(a)(10) requires airport sponsors to provide documented assurance that appropriate action has been or will be taken to restrict the land use adjacent to or in the immediate vicinity of an airport to activities and purposes compatible with normal airport operations (e.g., landing and takeoff of aircraft).

CRS Section 43-10-113, *Safe Operating Areas Around Airports – Establishment*, decrees that public airports and land areas surrounding such airports are a matter of state interest. As such, the law mandates that government entities with zoning and building permit authority adopt and enforce, at a minimum, rules and regulations to protect the land areas defined in 14 CRR Part 77. CRS Section 43-10-10, *Division of Aeronautics – Duties*, directs CDOT Division of Aeronautics to assist the FAA and local governments in the identification and control of potentially hazardous obstructions to navigable airspace utilizing the standards described in federal rules and regulations for identifying such hazardous obstructions. Land use and height controls are thus the joint responsibility of federal, state,

[30] National Academy of Sciences. (2010). *Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources*.

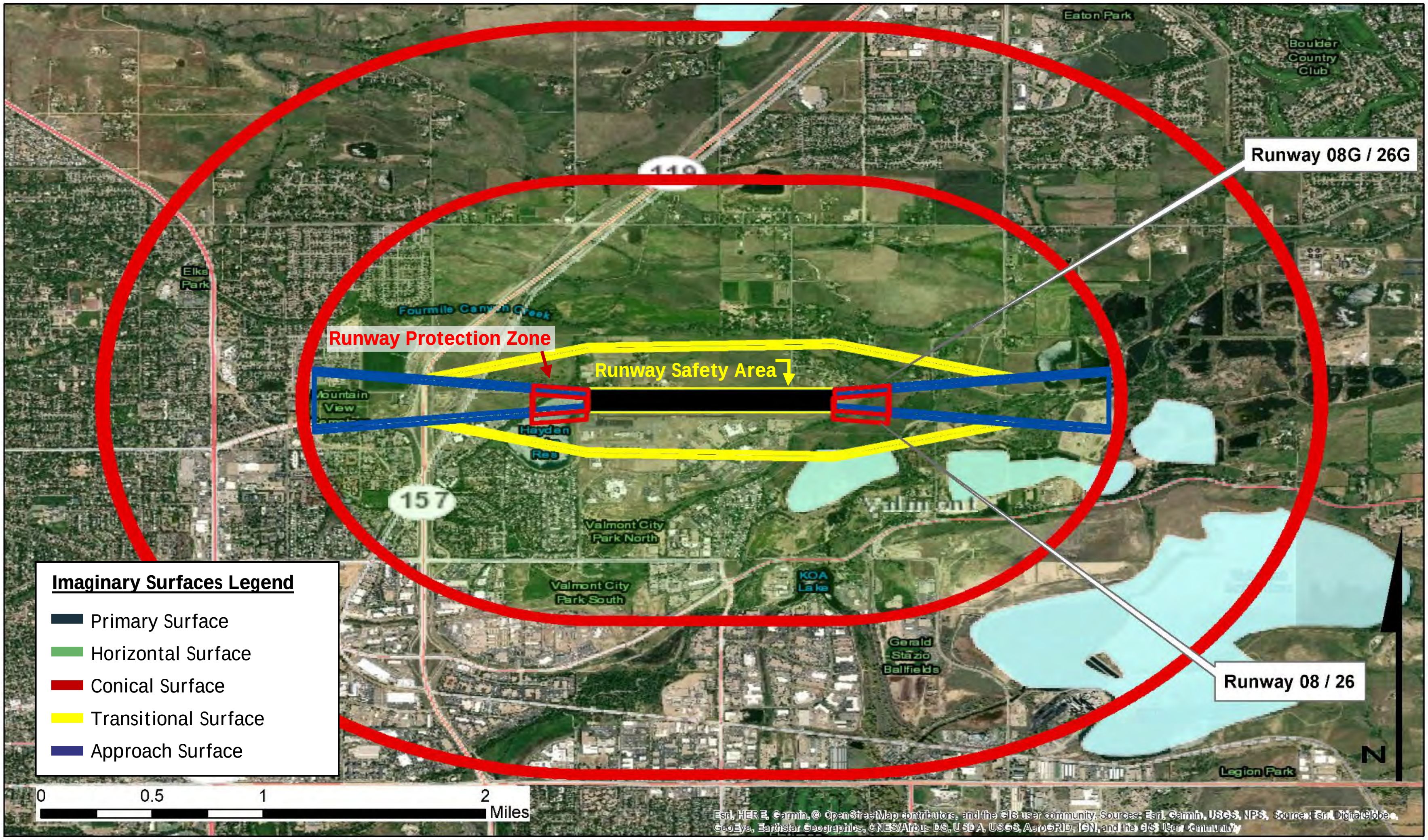
local government officials, as well as airports, to ensure airports can operate safely and harmoniously with their surrounding communities.

Issues of land use incapability are becoming particularly acute in Colorado as the population continues to boom, particularly in the state's urban core. To help airport managers identify existing zoning controls and articulate concerns relative to existing and future land use incompatibilities, FAR Part 77 maps were prepared near the outset of the CASP for each airport. These maps also identified the Runway Protection Zones (RPZs) and Runway Safety Areas (RSAs) for each runway. Maps were used during on-site airport visits to catalyze meaningful discussion on the most significant land use threats facing Colorado airports, educate managers on the importance of protected airspace, and identify areas of concern for future land acquisition should expansion be warranted. These conversations revealed that 64 percent of Colorado system airports had either or both land use or height controls, and 42 percent reported enforcing Part 77 surfaces. **Figure 3.18** is a sample Part 77 airspace, RPZ, and RSA exhibit prepared for the site visit at Boulder Municipal Airport (BDU).

These exhibits were discussed during site visits to identify areas of existing or potential incompatible land uses and concerns of the airport sponsors related to serving aviation demand while also promoting compatible land use development surrounding the airports. Airports identified concerns regarding the growing population and development boom that is increasing demand for aviation, but also creating more incompatibilities due to the high level of development, both commercial and residential, more of which seems to be inching toward airports. For example, lands surrounding Colorado Springs Municipal (COS) and Meadow Lake (FLY) airports are being converted to residential development, prompting significant concerns by the airports, the CDOT Division of Aeronautics, and local government officials. In fact, the Colorado Aeronautical Board sent a letter to the Board of El Paso County Commissioners in April 2019 encouraging the county to consider FLY when evaluating land use proposals. Proposed residential development near and adjacent to the airport could threaten the safety and utility of the facility, as well as cause safety and nuisance issues affecting future residents.

These issues are further documented in **Chapter 4. Aviation System Issues** and are likely to impact the Colorado airport system's future development needs and opportunities. CDOT Division of Aeronautics plans to use the results of the CASP, in conjunction with feedback from airports, to examine potential policy considerations to enhance land use compatibility, promote smart land use choices, and preserve long-term airport sustainability.

Figure 3.18. Boulder Municipal Airport (BDU) Part 77, RPZ, and RSA Exhibit Developed for CASP Site Visit



Source: Kimley-Horn, 2019

3.3.8. Water Resources

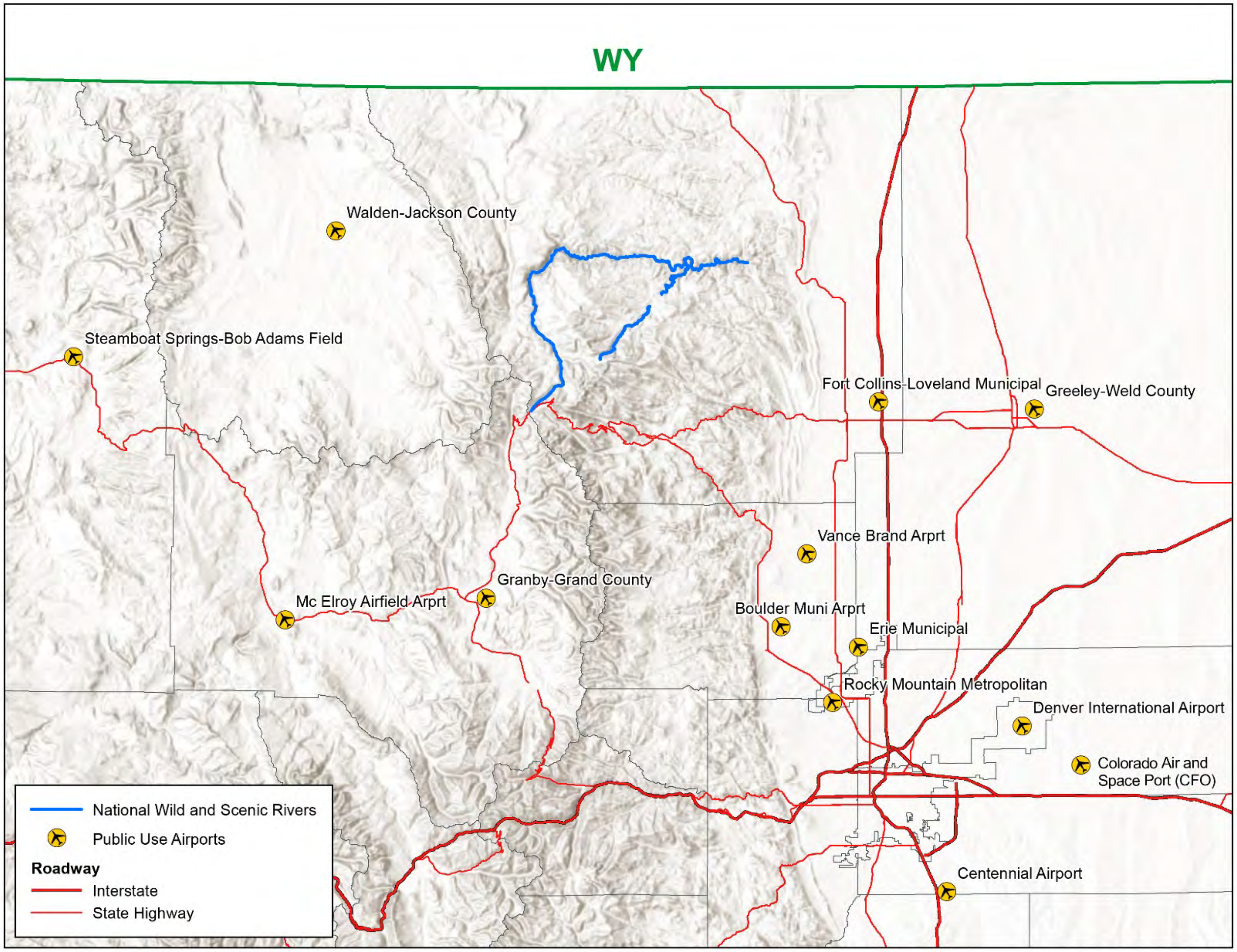
Water resources encompass all surface waters and groundwater. Water resources are important in providing drinking water, as well as in supporting ecosystems, industry, agriculture, transportation, and even recreation. Water resources include wetlands, surface waters, groundwater, floodplains, and Wild and Scenic Rivers. Previous FAA guidance separated these water resources into different impact categories. However, in recognition of the unavoidable interconnectedness of these different water resources and, therefore, how impacts on one water resource can have consequences on the function of the entire system, the FAA created the integrated Water Resources environmental impact category in 2015. The applicable water resource categories are as follows:

- **Wetlands.** Wetlands are areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support vegetation adapted for life in saturated soil conditions. This includes bogs, marshes, and swamps.
- **Floodplains**. Floodplains are lowland areas connected to inland and/or coastal waters that are periodically flooded.
- **Surface Waters**. Surface waters include rivers, streams, lakes, ponds, estuaries, and oceans.
- **Groundwater**. Groundwater is subsurface water found in space between rock, sand, and clay formations. Aquifers are the geologic layers that store and transmit groundwater to wells, springs, and other sources.
- **Wild and Scenic Rivers.** Wild and Scenic Rivers are rivers designated by the Wild and Scenic Rivers Act of 1968 as having certain outstanding natural, cultural, and recreational values. The special regulations imposed by the act preserve the free-flowing condition of these rivers for the enjoyment of present and future generations.

Federal agencies including the U.S. Army Corps of Engineers, U.S. EPA, and USFWS, as well as applicable regional, state, local, and tribal agencies are responsible for maintaining information on water resources to ensure airport actions do not have adverse impacts. The northernmost segment of the Cache la Poudre River is the only designated Wild and Scenic River in Colorado. This specific designation covers 76 miles from the headwaters of the river at Cache la Poudre Lake in Rocky Mountain National Park downstream along the south fork of the river. **Figure 3.19** depicts the designated Wild and Scenic segment of the Cache la Poudre River and surrounding airports.

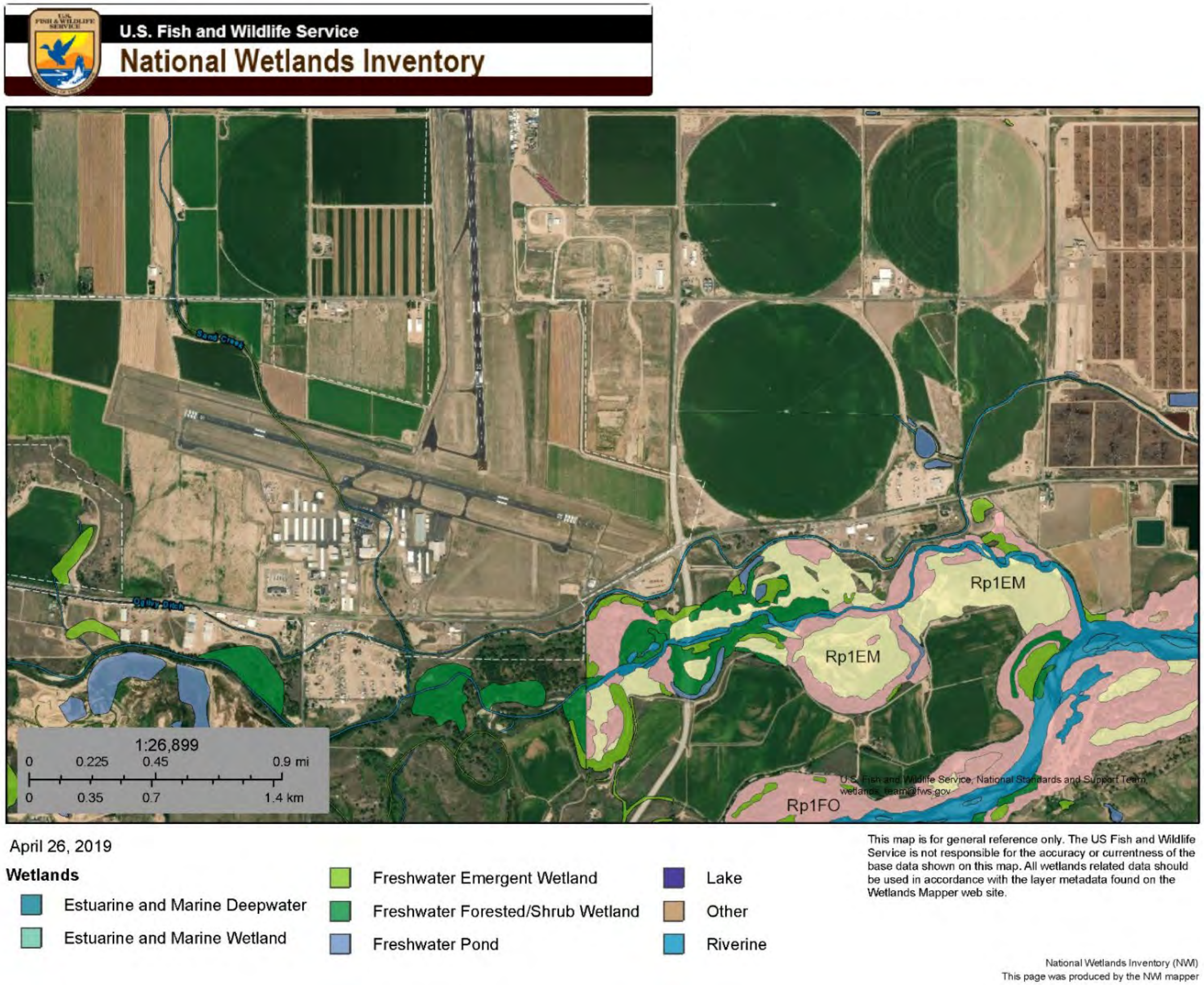
According to an analysis completed by the City of Greeley and the airport's 2015 master plan, the southern portion of Greeley-Weld County Airport is located within the floodplain of the Cache la Poudre River. Additionally, the USFWS National Wetlands Inventory revealed that a variety of wetlands exist to the west, southwest, south, southeast, and east of the airport property. Because of the airport's proximity to a Wild and Scenic River, as well as the existence of wetlands on airport property, the master plan determined that any airport development projects would need to be closely coordinated with the appropriate environmental agencies to ensure that adverse impacts on these water resources be mitigated and/or avoided. No airport other than Greeley-Weld County recognized the river as a potential environmental concern. **Figure 3.20** depicts the Cache la Poudre River and various wetlands surrounding Greeley-Weld County Airport.

Figure 3.19. Wild and Scenic Segment of the Cache la Poudre River and Surrounding Airports



Sources: National Wild and Scenic River System; Kimley-Horn, 2019

Figure 3.20. Wetlands and Other Waterways Surrounding the Greeley-Weld County Airport (GXY)



Source: USFWS National Wetlands Inventory, 2019

3.3.9. Environmental Summary

The environmental context of an airport can significantly impact the course of development. From a system perspective, a particular environmental issue affecting one or multiple airports in a region can drive the type and volume of activity that occurs within the region, as well improvement projects that could be implemented to address those activities. For example, as demand increases in urban areas, it will likely become necessary to balance demand and capacity across multiple airports. Because some urban airports are already in air quality non-attainment areas, funding agencies could prioritize improvements to shift air traffic—and associated air pollution—to regions that do not experience air quality issues.

Table 3.9 reports the number of airports in Colorado that reported each type of environmental consideration in either their master plan or during the CASP inventory process. Airport-specific responses are reported in **Table 3.10**. Issues identified in master plans are denoted with a check-mark (✓); issues reported during the inventory process are denoted with a dot (●). This reveals that 59 out of 66 (89 percent) of the Colorado system airports are concerned about land use and 31 out of 66 (47 percent) identified biological resources as an issue of concern. Twenty-three (35 percent) airports reported concerns about water resources and 21 (32 percent) airports reported historical, architectural, archeological, and cultural resources being a major issue across the state. Only five (8 percent) airports reported DOT Section 4(f) as an issue. It is imperative that airports, CDOT Division of Aeronautics, and other federal, state, and local agencies involved in the governance of these resources work together to help airports coexist with the environment. Such a proactive approach will reduce conflicts and ensure that both the environment and airports can support current and future generations.

Table 3.9. Key Environmental Issues in Colorado

Environmental Consideration	Total No. Airports with Impacts
Air quality	16
Biological resources	31
DOT Section 4(f)	5
Farmlands	15
Hazardous materials, solid waste, and pollution prevention	16
Historical, architectural, archeological, and cultural resources	21
Land use	59
Water resources	23

Note: Section 4(f) states that a transportation project that requires the use of publicly-owned land from a park, recreation area, wildlife and waterfowl refuge, or land from an historic site of national, state, or local significance will not be approved unless there is no feasible alternative or the DOT determines the impact on the property will be minimal.
Sources: Colorado airports master plans (various dates); 2018 Inventory & Data Form

3.4. Supplemental System Context Summary

The information presented in this chapter represent key issues for Colorado. Considering mobility and access and environmental compliance needs will help guide future policy recommendations and provide insight for CDOT Division of Aeronautics when determining how to prioritize investments in the system. By using this information to conduct a proactive planning approach, CDOT Division of Aeronautics can maximize investment in the system and provide a viable aviation system over time.

Table 3.10. Environmental Considerations by Airport

Associated City	Airport	FAA Identifier	Air Quality	Biological Resources	DOT Section 4(f)	Farmlands	Hazardous Materials, Solid Waste, & Pollution Prevention	Historical, Architectural, Archeological, and Cultural Resources	Land Use	Water Resources
Akron	Colorado Plains Regional	AKO		✓					●	
Alamosa	San Luis Valley Regional	ALS*		●					●	●
Aspen	Aspen-Pitkin County	ASE	✓	✓	✓		✓●	✓	✓●	●
Blanca	Blanca	05V*								
Boulder	Boulder Municipal	BDU	✓	✓	✓	✓	✓	✓	✓●	●
Brush	Brush Municipal	7V5*							●	
Buena Vista	Central Colorado Regional	AEJ		✓				✓	●	
Burlington	Kit Carson County	ITR*							●	
Canon City	Fremont County	1V6	✓						●	
Center	Leach	1V8*							●	
Colorado Springs	Colorado Springs Municipal	COS	✓	✓●		✓	✓●	✓	✓●	●
Colorado Springs	Meadow Lake	FLY							●	
Cortez	Cortez Municipal	CEZ*							✓●	●
Craig	Craig-Moffat	CAG		✓●			✓	✓	●	●
Creede	Mineral County Memorial	C24*								
Del Norte	Astronaut Kent Rominger	RCV*							●	
Delta	Blake Field	AJZ	✓	●					●	
Denver	Centennial	APA							●	●

Airports			Air Quality	Biological Resources	DOT Section 4(f)	Farmlands	Hazardous Materials, Solid Waste, & Pollution Prevention	Historical, Architectural, Archeological, and Cultural Resources	Land Use	Water Resources
Associated City	**Airport**	**FAA Identifier**								
Denver	Rocky Mountain Metropolitan	BJC	✓	✓		✓			✓●	✓
Denver	Denver International	DEN	●	✓●	●	●	●	✓	✓●	●
Denver	Colorado Air and Space Port	CFO	✓	✓				✓	●	●
Durango	Durango-La Plata County	DRO	✓	✓●		✓		✓	●	●
Eads	Eads Municipal	9V7*							●	
Eagle	Eagle County Regional	EGE		✓	✓			✓	●	●
Erie	Erie Municipal	EIK							●	●
Fort Collins/Loveland	Northern Colorado Regional	FNL		✓		✓	✓	✓	●	
Fort Morgan	Fort Morgan Municipal	FMM		✓●	✓	✓				
Glenwood Springs	Glenwood Springs Municipal	GWS*							●	
Granby	Granby-Grand County	GNB*							✓●	
Grand Junction	Grand Junction Regional	GJT		✓		✓	✓	✓	✓●	
Greeley	Greeley-Weld County	GXY	✓	✓		✓			●	●
Gunnison	Gunnison-Crested Butte Regional	GUC		✓●			✓	✓	●	●
Haxtun	Haxtun Municipal	17V*								
Hayden	Yampa Valley	HDN		✓			✓			●
Holly	Holly	K08*							●	●
Holyoke	Holyoke	HEQ*	✓			✓			●	
Julesburg	Julesburg Municipal	7V8*							●	
Kremmling	Mc Elroy Airfield	20V		✓			✓	✓	✓●	●

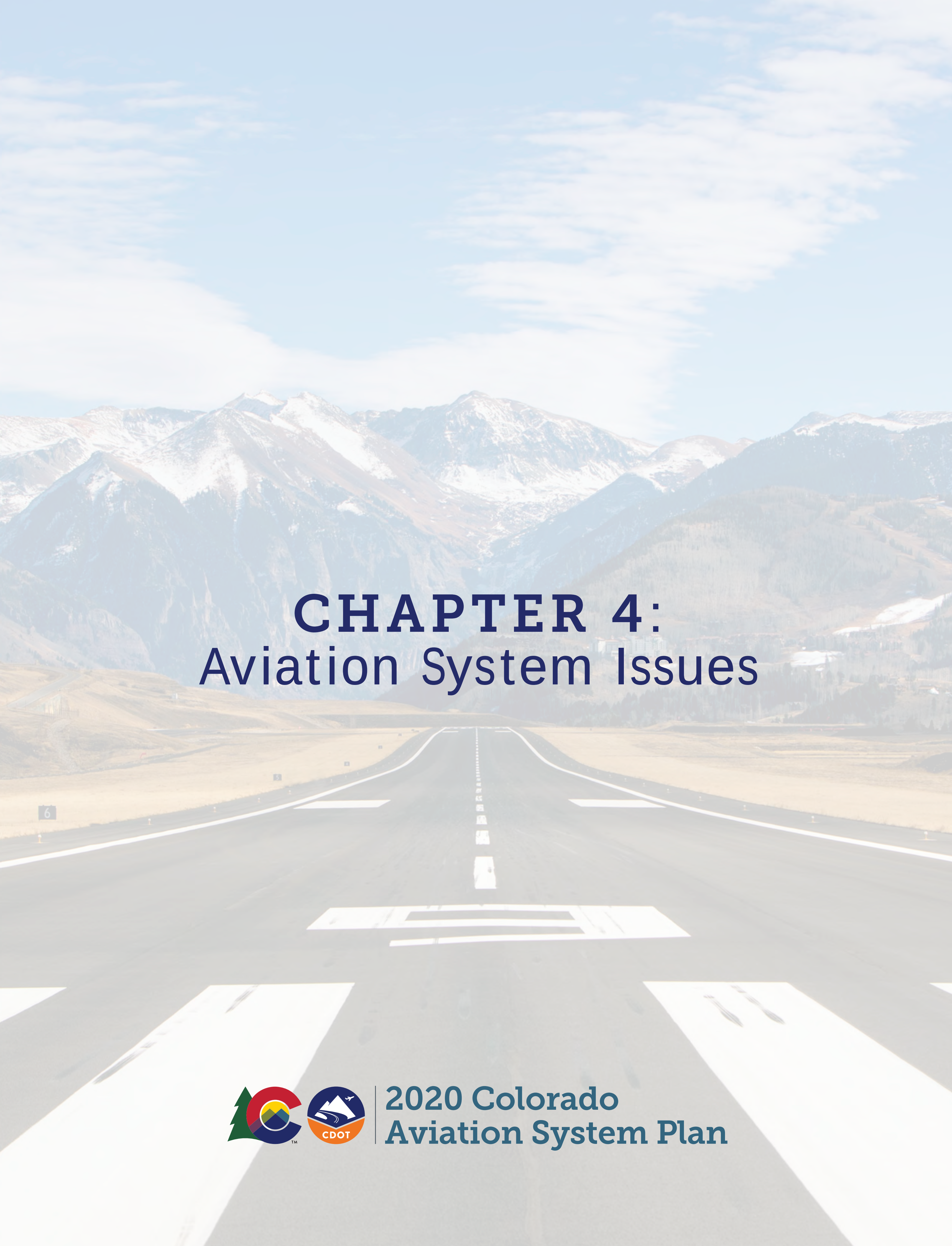
Airports			Air Quality	Biological Resources	DOT Section 4(f)	Farmlands	Hazardous Materials, Solid Waste, & Pollution Prevention	Historical, Architectural, Archeological, and Cultural Resources	Land Use	Water Resources
Associated City	**Airport**	**FAA Identifier**								
La Junta	La Junta Municipal	LHX	✓						●	
La Veta	Cuchara Valley	07V*							●	
Lamar	Lamar Municipal	LAA*								
Las Animas	Las Animas-Bent County	7V9*							●	
Leadville	Lake County	LXV	✓					✓	●	
Limon	Limon Municipal	LIC				✓	✓	✓	●	●
Longmont	Vance Brand	LMO	✓	✓●		✓			●	
Meeker	Meeker/Coulter Field	EEO		✓		✓		✓	●	
Monte Vista	Monte Vista Municipal	MVI*							●	●
Montrose	Montrose Regional	MTJ							●	●
Nucla	Hopkins Field	AIB		✓					●	
Pagosa Springs	Stevens Field	PSO*							●	
Paonia	North Fork Valley	7V2*								
Pueblo	Pueblo Memorial	PUB	✓	✓●					✓●	●
Rangely	Rangely	4V0	✓	✓		✓	✓	✓	●	
Rifle	Rifle Garfield County	RIL		✓	✓				●	
Saguache	Saguache Municipal	04V*							●	
Salida	Harriet Alexander Field	ANK		✓				✓	✓●	
Springfield	Springfield Municipal	8V7*							●	
Steamboat Springs	Steamboat Springs	SBS	✓	✓			✓	✓	✓●	●

Airports			Air Quality	Biological Resources	DOT Section 4(f)	Farmlands	Hazardous Materials, Solid Waste, & Pollution Prevention	Historical, Architectural, Archeological, and Cultural Resources	Land Use	Water Resources
Associated City	**Airport**	**FAA Identifier**								
Sterling	Sterling Municipal	STK*							✓●	
Telluride	Telluride Regional	TEX		✓			✓		●	
Trinidad	Perry Stokes	TAD		✓		✓			✓●	
Walden	Walden-Jackson County	33V*							●	
Walsenburg	Spanish Peaks Airfield	4V1		✓				✓	●	
Westcliffe	Silver West	C08*							●	
Wray	Wray Municipal	2V5					✓		●	
Yuma	Yuma Municipal	2V6				✓	✓	✓	✓●	

**Note: Master plans were unavailable. Responses obtained from the 2018 Airport Data & Inventory Form. Symbols: ✓ = Data obtained from master plan.*

● = Data obtained during the CASP inventory process.

Sources: Colorado airports master plans (various dates); 2018 Airport Data & Inventory Form



CHAPTER 4:
Aviation System Issues

2020 Colorado
Aviation System Plan

Chapter 4. Aviation System Issues

4.1. Introduction

Aviation is a rapidly evolving industry affected by variables both internal to and external of the system itself. Factors that affect airports can range from global geopolitical forces affecting the price of petroleum, airport security, and immigration; to federal- and state-level concerns such as employment and residency distribution; to local-level planning issues that affect how an airport is operated and the projects that are pursued. Amid these ever-evolving forces, airports and airport sponsors are tasked with providing safe and secure aviation facilities that promote mobility and equitable access for various types of airport users in a revenue-limited environment.

Understanding the major issues affecting Colorado's airports is an important task when assessing the system's historical, current, and future performance. As such, this chapter provides an overview of the factors that airports, airport sponsors, and various aviation stakeholders have identified as most significantly affecting airports' abilities to optimally support Colorado aviation system users. The issues and trends described in this chapter were gathered from a variety of sources designed to capture a broad spectrum of perspectives on the Colorado aviation system including:

- **Project Advisory Committee (PAC).** Established to provide guidance and support for the implementation of the CASP, the PAC comprises representatives from several Colorado airports, CDOT Division of Aeronautics, the Federal Aviation Administration (FAA) Denver Airports District Office, Colorado Aeronautical Board, Colorado Airport Operators Association, and CDOT Division of Transportation Development. During the PAC's first meeting, attendees identified and prioritized current and long-term issues that could most significantly affect the Colorado system.
- **Airport manager interviews.** Site visits were conducted at the 65 publicly owned and 1 privately owned, public-use airports that compose the Colorado airport system. Airport managers were asked to provide a list of the top three issues affecting their facilities. Managers identified issues ranging from site-specific concerns such as hangar shortages and maintenance needs to broad issues such as the international pilot shortage, the impact of unmanned aerial systems/vehicles (UAS/UAV or drones) on air transportation, and state and federal regulatory concerns.
- **Aviation stakeholders.** Key aviation stakeholders representing a cross-section of individuals from local, state, and federal governments; aviation-related industries and trade organizations; educational institutions; and aviation enthusiasts were interviewed by the project team. These extensive discussions asked both targeted and open-ended questions aimed at pinpointing areas of greatest potential impact.
- **Aviation user groups.** The project team conducted targeted outreach efforts with CDOT Modal Managers and emergency service providers. Each of these groups regularly interacts with and depends on airports as part of Colorado's broader transportation network**.**

The goal categories of the Colorado Aviation System Plan (CASP) provided in **Chapter 1. Study Design and Goals** serve as the framework for the trends and issues identified by these groups. In this way, the many linkages between the system's goals, identified issues, and recommendations developed as the final outcome of this study become clear and demonstrate how the CASP is an important tool in meeting aviation's challenges today and into the future. The following summarizes the goal categories of the CASP:

- **Goal 1: Safety and Efficiency.** Advance Colorado's airport system by promoting and preserving safe and efficient facilities on and off airports.
- **Goal 2: Access and Mobility.** Provide Colorado's airports with infrastructure and sufficient capacity to access the versatile aviation activities and facilities in the state and provide adequate mobility for users.
- **Goal 3: Economic Sustainability.** Support sustainable economic growth and development and continue Colorado's existing status as a leader in technology, testing, and the aerospace industry.
- **Goal 4: System Viability.** Preserve, maintain, and enhance airport system assets through cost-effective investments to ensure the system's long-term viability.

Table 4.1 summarizes the top 10 issues and trends with the highest potential to impact the future of aviation in Colorado within the framework of the CASP goal categories, as well as by respondent group. Issues that only appeared once are not summarized in this document, as they were rarely identified through this process.[1] The sections that follow provide details about each of these topics and highlight their potential impacts on the current and future aviation system in Colorado. The sections appear alphabetically as presented in the following table. Note that some respondent groups identified issues of concern at specific airports, while those same airport managers did not articulate the same needs in the top issues reported during their airport manager interviews. This highlights the importance of analyzing needs from multiple perspectives during the system planning process.

[1] Modal managers proved the one exception, as these stakeholders focused on intermodal integration in Colorado. This topic is discussed in Chapter 3. Supplemental System Context and thus excluded here for brevity.

Table 4.1. Colorado's Key Aviation Issues by System Goal and Respondent Group

Goal Categories and Respondent Groups/ Associated City, Airport, FAA Identifier	Airspace / Air Traffic Congestion	Aviation Demand	Fuel Types and Availability	Hangar Availability	Infrastructure Needs	Land Use Planning and Encroachment	Pilot / Aviation Workforce Shortage	Public Engagement / Government Support	Revenue Generation and Funding Challenges	Technology
Goals										
Goal 1: Safety and Efficiency	✓				✓	✓				✓
Goal 2: Access and Mobility		✓		✓	✓	✓			✓	
Goal 3: Economic Sustainability			✓	✓		✓	✓	✓	✓	✓
Goal 4: System Viability					✓	✓	✓	✓	✓	
Respondent Groups										
PAC		✓	✓		✓	✓	✓	✓	✓	✓
Aerospace UAS	✓							✓		✓
Aspen Flying Club	✓		✓		✓	✓	✓			
Boutique Air	✓				✓	✓	✓	✓	✓	
Colorado Agriculture Aviation Association	✓		✓		✓		✓			✓
Colorado Air National Guard	✓						✓			
Colorado Aviation Business Association	✓				✓	✓	✓	✓		✓
Colorado Bureau of Land Management (BLM) Fire and Aviation			✓		✓					
Colorado Northwestern Community College (CNCC)					✓		✓	✓	✓	✓
Colorado Oil and Gas Association	✓		✓		✓					✓
Colorado Pilots Association					✓	✓	✓			✓
Colorado Flights Alliance					✓		✓	✓	✓	✓
Department of Public Safety (DPS) Division of Fire Protection Services		✓	✓		✓	✓		✓	✓	

Goal Categories and Respondent Groups/ Associated City, Airport, FAA Identifier			Airspace / Air Traffic Congestion	Aviation Demand	Fuel Types and Availability	Hangar Availability	Infrastructure Needs	Land Use Planning and Encroachment	Pilot / Aviation Workforce Shortage	Public Engagement / Government Support	Revenue Generation and Funding Challenges	Technology
DPS Director of Flight Operations							✓					
Metropolitan State University (MSU)				✓			✓	✓	✓	✓		✓
Office of Economic Development and International Trade (OEDIT)							✓	✓		✓	✓	
Rural Partners in Medicine			✓			✓	✓			✓		
University Corporation for Atmospheric Research (UCAR) Aviation Facility			✓		✓		✓		✓			✓
Emergency Service Providers			✓				✓					✓
CDOT Modal Managers			*See Chapter 3. Supplemental System Context*									
Airports												
Associated City	**Airport**	**FAA Identifier**										
Akron	Colorado Plains Regional	AKO		✓			✓					
Alamosa	San Luis Valley Regional	ALS		✓			✓				✓	
Aspen	Aspen-Pitkin County	ASE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Blanca	Blanca	05V	Not provided (NP)									
Boulder	Boulder Municipal	BDU				✓	✓	✓		✓		
Brush	Brush Municipal	7V5										
Buena Vista	Central Colorado Regional	AEJ			✓	✓	✓					
Burlington	Kit Carson County	ITR			✓	✓	✓					
Canon City	Fremont County	1V6		✓		✓	✓					
Center	Leach	1V8	NP									
Colorado Springs	Meadow Lake	FLY						✓		✓		

Goal Categories and Respondent Groups/ Associated City, Airport, FAA Identifier			Airspace / Air Traffic Congestion	Aviation Demand	Fuel Types and Availability	Hangar Availability	Infrastructure Needs	Land Use Planning and Encroachment	Pilot / Aviation Workforce Shortage	Public Engagement / Government Support	Revenue Generation and Funding Challenges	Technology
Colorado Springs	Colorado Springs Municipal	COS						✓			✓	
Cortez	Cortez Municipal	CEZ					✓				✓	
Craig	Craig-Moffat	CAG				✓	✓					
Creede	Mineral County Memorial	C24				✓	✓					
Del Norte	Astronaut Kent Rominger	RCV	NP									
Delta	Blake Field	AJZ				✓	✓				✓	
Denver	Centennial	APA						✓			✓	✓
Denver	Rocky Mountain Metropolitan	BJC				✓	✓					
Denver	Colorado Air and Space Port	CFO					✓	✓			✓	
Denver	Denver International	DEN					✓	✓				
Durango	Durango-La Plata County	DRO		✓					✓		✓	
Eads	Eads Municipal	9V7					✓					
Eagle	Eagle County Regional	EGE	NP									
Erie	Erie Municipal	EIK		✓		✓		✓				
Fort Morgan	Fort Morgan Municipal	FMM										
Glenwood Springs	Glenwood Springs Municipal	GWS			✓	✓		✓				
Granby	Granby-Grand County	GNB					✓				✓	
Grand Junction	Grand Junction Regional	GJT					✓				✓	
Greeley	Greeley-Weld County	GXY						✓			✓	
Gunnison	Gunnison-Crested Butte Regional	GUC	NP									
Haxtun	Haxtun Municipal	17V				✓	✓					

Goal Categories and Respondent Groups/ Associated City, Airport, FAA Identifier			Airspace / Air Traffic Congestion	Aviation Demand	Fuel Types and Availability	Hangar Availability	Infrastructure Needs	Land Use Planning and Encroachment	Pilot / Aviation Workforce Shortage	Public Engagement / Government Support	Revenue Generation and Funding Challenges	Technology
Hayden	Yampa Valley	HDN		✓							✓	
Holly	Holly	K08	NP									
Holyoke	Holyoke	HEQ						✓			✓	
Julesburg	Julesburg Municipal	7V8	NP									
Kremmling	Mc Elroy Airfield	20V					✓					
La Junta	La Junta Municipal	LHX		✓							✓	
La Veta	Cuchara Valley	07V					✓			✓		
Lamar	Lamar Municipal	LAA			✓	✓	✓					
Las Animas	Las Animas-Bent County	7V9	NP									
Leadville	Lake County	LXV					✓				✓	
Limon	Limon Municipal	LIC					✓					
Longmont	Vance Brand	LMO		✓		✓	✓					
Fort Collins/Loveland	Northern Colorado Regional	FNL		✓			✓			x		
Meeker	Meeker/Coulter Field	EEO	✓					✓			✓	
Monte Vista	Monte Vista Municipal	MVI					✓				✓	
Montrose	Montrose Regional	MTJ									✓	
Nucla	Hopkins Field	AIB	NP									
Pagosa Springs	Stevens Field	PSO					✓				✓	
Paonia	North Fork Valley	7V2					✓					
Pueblo	Pueblo Memorial	PUB							✓		✓	
Rangely	Rangely	4V0				✓	✓					

Goal Categories and Respondent Groups/ Associated City, Airport, FAA Identifier			Airspace / Air Traffic Congestion	Aviation Demand	Fuel Types and Availability	Hangar Availability	Infrastructure Needs	Land Use Planning and Encroachment	Pilot / Aviation Workforce Shortage	Public Engagement / Government Support	Revenue Generation and Funding Challenges	Technology
Rifle	Rifle Garfield County	RIL	✓									
Saguache	Saguache Municipal	04V	NP									
Salida	Harriet Alexander Field	ANK						✓			✓	
Springfield	Springfield Municipal	8V7					✓					
Steamboat Springs	Steamboat Springs	SBS				✓	✓	✓				
Sterling	Sterling Municipal	STK				✓	✓				✓	
Telluride	Telluride Regional	TEX	✓			✓			✓			✓
Trinidad	Perry Stokes	TAD					✓				✓	
Walden	Walden-Jackson County	33V					✓					
Walsenburg	Spanish Peaks Airfield	4V1					✓					
Westcliffe	Silver West	C08	NP									
Wray	Wray Municipal	2V5			✓	✓	✓					
Yuma	Yuma Municipal	2V6			✓	✓	✓					

Source: Interviews and meetings conducted by Kimley-Horn, October 2018 – May 2019

4.2. Airspace / Air Traffic Congestion

Safety and Efficiency

Half of the stakeholders interviewed as part of this study reported air traffic congestion as one of the most significant issues facing the state. Air traffic congestion occurs when existing airports and airways do not provide sufficient capacity to efficiently move aircraft and their passengers between their places of origin and ultimate destinations. While the causes for airspace congestion are many, including commercial airline schedules, airport layouts, and environmental concerns (e.g., noise abatement measures that limit hours of flight operations), the ultimate effects are straightforward: delay and, in some cases, safety incursions.

Airspace in the (U.S.) is divided into multiple classes developed to promote the safe and efficient movement and control of aircraft during flight and approach/departure procedures. Each class has different characteristics, dimensions, altitudes, and requirements based on the type of activity they are intended to support. Issues can arise when aircraft of differing weight classes and speed operate in shared airspace, which affects air traffic control processing and can make navigation difficult. Airspace can also ground or significantly impact the movement of some types of operations. The Colorado Air National Guard's 140th Fighter Wing at Buckley Air Force Base (AFB) reported that it operates in 1,500 feet of Class B airspace above Denver. This limits eastbound flights to a narrow tunnel, aircraft must fly elsewhere or at low altitudes during cloud cover, and all operations require extensive coordination with Denver International (DEN) air traffic control. These airspace limitations have precluded the unit from potentially transitioning to the F-35 stealth fighter jets that are more advanced than the F-16s that it currently operates.

Airspace concerns also impact pilot training. The Aspen Flying Club reported a need for a singular source that compiles air traffic control and/or risk mitigation plans within designated flight training areas. Currently, such plans are available from multiple sources, making navigation confusing and potentially dangerous for students and other pilots. Emergency service providers also face challenges associated with operational mixes. Blackhawk and Skycrane helicopters used during search and rescue and wildland firefighting operations need to be separated from other aircraft for safety purposes, which can be exceedingly challenging when operating at small airports.

Airspace concerns and traffic congestion are particularly germane in the Denver area, as demand for air travel has matched the burgeoning population over the past decade, although airports outside of the urban core expressed similar concerns. The use of UAS has exacerbated the issue and made the threat of mid-air collisions increasingly present in the minds of pilots and UAS operators. The FAA's airspace modernization initiative known as the Next Generation Air Transportation System, or NextGen, will also enhance air safety. These issues are discussed in further detail in Section 4.11. Technology.

To mitigate the issues associated with air space and air traffic congestion, CDOT Division of Aeronautics, the FAA, National Air Traffic Controllers Association (NATCA), and Searidge Technologies have partnered with Northern Colorado Regional (FNL) on the Colorado Remote Tower Project. Located in Loveland, Colorado, FNL is the state's busiest non-towered airport with a mix of fixed and rotary winged traffic. Allegiant Airlines had operated at FNL but ceased service due to increasingly high operational levels without an air traffic control tower (ATCT). The remote tower combines visual/camera with radar/track-based input to control the airport remotely. The technology enhances

Remote tower project at Northern Colorado Regional Airport (Shahn Sederberg, CDOT)

safety and efficiency while dramatically reducing the costs associated with the construction and staffing of a traditional ATCT. FNL and CDOT Division of Aeronautics anticipate that scheduled commercial air service will be reinstated once the project is fully operational. Additionally, the potential utility of remote towers at Colorado's commercial ski country airports, including Hayden-Yampa Valley Regional (HDN), Gunnison-Crested Butte Regional (GUC), Montrose Regional (MTJ), Durango-La Plata County (DRO), and Telluride Regional (TEX), has already been recognized. Remote tower technology may allow these busy airports to safely accommodate higher volumes of seasonal activity and reduce aircraft diversions due to adverse weather conditions.[2] While still in its initial testing phase, airports and pilots are hopeful that remote tower technology may provide a cost-effective solution to this challenging issue.

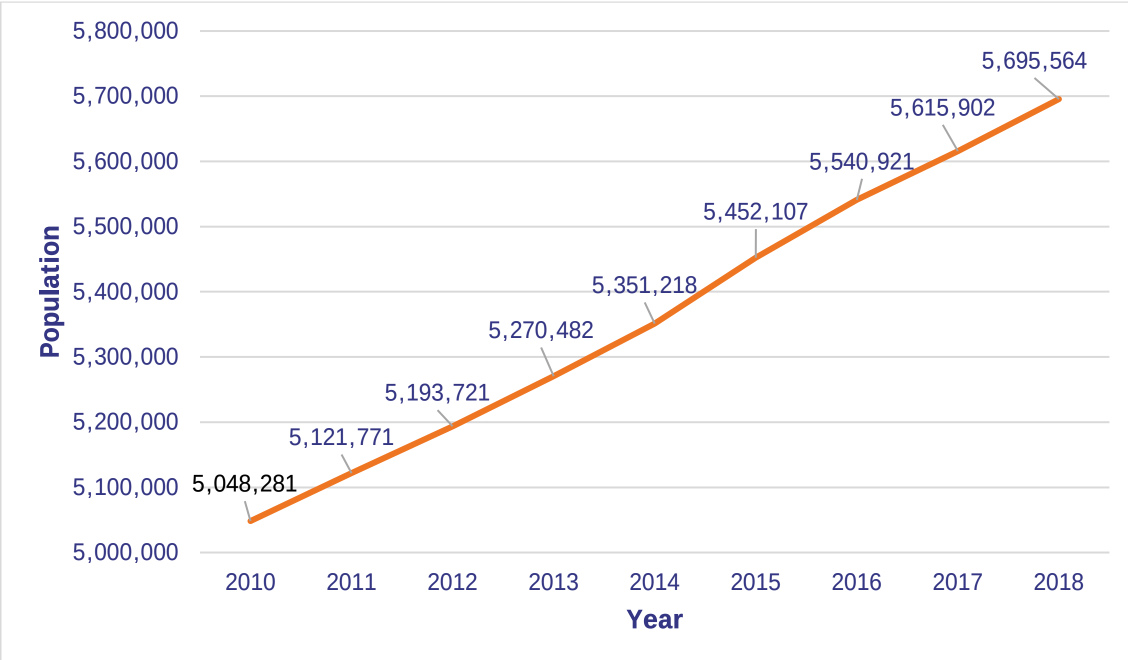
4.3. Aviation Demand

Population is one of the primary indicators of aviation demand for both general aviation (GA) and commercial service airports. Operational pressures can be particularly acute when population growth is coupled with expansion in the commercial industries most commonly associated with aviation use. As shown in **Figure 4.1,** Colorado's population grew by 12.8 percent between 2010 and 2018 from 5,048,281 to 5,695,564 residents, earning Colorado the distinction as the fourth-fastest growing state in the U.S. By 2050, that figure is projected to rise to nearly 8,500,000 total residents. During nearly that same time (2010 – 2017), Colorado experienced a 20 percent employment increase, the second-highest rate in the U.S., with growth led by health services; professional and technical services; and accommodation and food.[3] Each of these industries is known to heavily rely on aviation services.

[2] CDOT Aeronautics. (no date [n.d.]). Colorado Remote Tower Project. Online at codot.gov/programs/remote-tower/TheProject (accessed July 2019).

[3] Garner, Elizabeth. (2018). *Growing Colorado: Population and Economic Transitions for Colorado.* State Demography Office, Colorado Department of Local Affairs. Available online at demography.dola.colorado.gov/demography/publications-and-presentations/#publications-and-presentations (accessed May 2019).

Figure 4.1. Colorado Population (2000 - 2018)

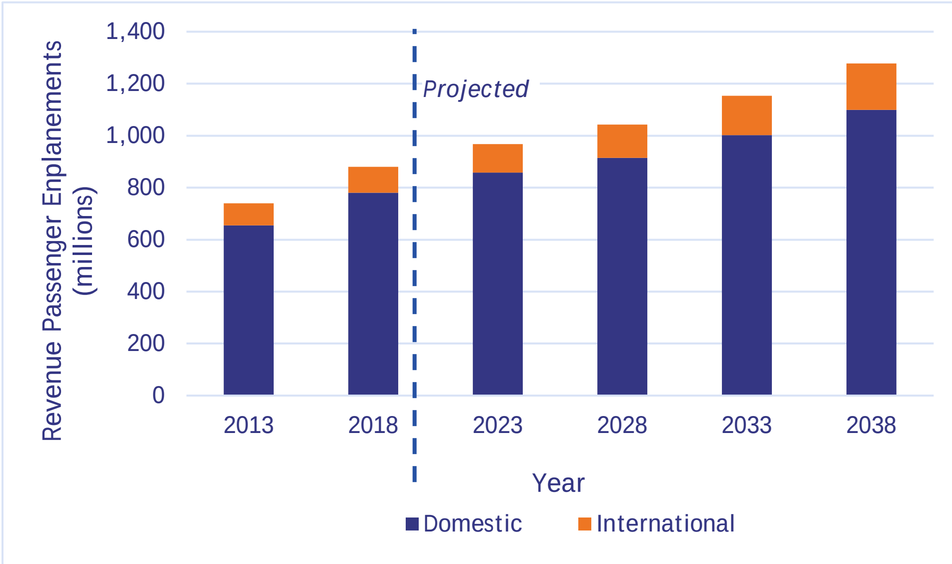


Source: U.S. Census Bureau, 2019

Population growth and economic expansion will have a particularly acute impact on commercial service activity. **Figure 4.2** depicts the projected growth in commercial service in the U.S. Over the 20-year planning horizon of the CASP, the number of revenue passenger enplanements is anticipated to rise by 2.4 percent annually, from 880 million in 2018 to 1,278 million by 2038 (45 percent total growth). Should current trends in Colorado continue, state-specific commercial service growth will likely outpace these national figures.[4]

[4] Additional details about Colorado-specific growth are presented in Chapter 7. Aviation Forecasts.

Figure 4.2. U.S. Revenue Passengers (2013 - 2038)



Source: FAA Aerospace Forecast 2019-2039

Take-off queue at Telluride Regional Airport (Kenny Maenpa)

To meet growing demand, U.S. carriers are anticipated to increase capacity through additional routes and frequency and increase the number of seats per operation, either through up-gauging or reconfiguring existing aircraft.[5] In addition to congestion issues, some airports may have to adapt infrastructure to accommodate larger aircraft—including jet bridges, deicing facilities, support equipment (e.g., tugs and baggage handling facilities), airfield pavement, and terminal/security facilities to process and hold additional passengers. These trends may also mean that the largest airports such as DEN will continue to expand while growth at smaller commercial service facilities without the capacity to handle larger jets may stagnate. Airlines may further reduce service at essential air service (EAS) airports as it becomes increasingly less cost-efficient to operate the small commuter aircraft, many of which are not jet aircraft. Colorado currently has three EAS-eligible communities: Alamosa, Cortez, and Pueblo. EAS funding has been the topic of much debate over the years with political pressures raising discussions to reduce or eliminate the subsidies.

Yet while some airports may struggle to meet existing and potential future commercial service and GA demands, others are working to draw additional operations to their facilities. La Junta Municipal (LHX), San Luis Valley Regional (ALS), and Colorado Plains Regional (AKO) airports all cited under-utilization as their most significant concern. Recent population growth has been clustered around the existing urban core of the state, with the highest rates in Weld, Adams, Denver, Arapahoe, and El Paso counties. Growth in other areas has been moderate, and the population of Colorado's most outlying counties has

[5] *FAA Aerospace Forecasts 2019-2039*

decreased over the last decade. With approximately 35 percent of the population living in just five of the 271 incorporated cities, Colorado has a distinct urban/rural divide that will likely only widen in the coming years. This sentiment was echoed by the PAC and identified as one of the most important issues of concern for the Colorado aviation system.

Ski country airports such as Yampa Valley (HDN), Aspen-Pitkin County (ASE), and Eagle County Regional (EGE) face their own challenges. Airports witness dramatic increases in winter operations with the influx of seasonal visitors and marked declines during shoulder seasons. The facilities, services, and staff levels required between these peak and non-peak seasons are vastly different. Airport managers are forced to make difficult logistical decisions about how to meet seasonal highs while maintaining expensive facilities and appropriate staff and service levels during the interim months.

4.4. Fuels Types and Availability

Economic Sustainability

Fuel availability and type is an important factor for pilots and aircraft owners when considering where to base their aircraft or conduct itinerant operations. Because fuel sales are one of the primary revenue-producing activities at many airports, those that do not sell fuel through either a fixed base operator (FBO) or self-serve station generally have access to significantly fewer resources than those that do. Airports without Jet A fuel are at a particularly acute disadvantage. Jet A is required by the turbine engines that power aircraft associated with business/corporate aviation, wildland firefighting, and some aerial applicator and medical activity. As a result, airports without this type of fuel cannot support the aviation activities with the most significant economic and quality-of-life benefits for their communities.

Airports reported that fuel farm development is limited by on-airport space, funding, and an overall inability to promote their facility as a viable location for business development to support use of Jet A fuel regularly enough to make it viable. Yuma Municipal (2V6), Central Colorado Regional (AEJ), and Lamar Municipal (LAA) airports all reported similar concerns. In several other cases, airports have fuel infrastructure, but that infrastructure is either outdated or too small to meet the needs of airport users. Glenwood Springs Municipal (GWS), for example, reported both its AvGas and Jet A systems are "old and in-need of an upgrade. The Jet A system needs a larger tank to meet the demands of larger aircraft." The availability of AvGas (100LL used in the piston engines of many GA aircraft) and/or Jet A is inherently tied to an airport's economic security and is discussed further in Section 4.10. Revenue Generation and Funding.

Jet A fuel truck at La Junta Municipal Airport

It is interesting to note that while airports identified a need for AvGas facilities and it continues to be the most commonly used fuel by piston aircraft, the future of 100LL is uncertain. 100LL is the only leaded fuel used in U.S. transportation today. Due to its harmful environmental effects, the FAA and the U.S. Environmental Protection Agency (EPA) have partnered to remove lead from aviation fuel. The FAA continues to research alternative fuels with industry partners, and several potentially viable solutions have emerged. Aircraft engines designed to operate on diesel, jet, and varying grades of unleaded motor fuel (MOGAS) are also being tested. Lower supplies of leaded products and more stringent regulations on the distribution of leaded fuels have caused the price of AvGas to rise, further increasing pressure to develop a viable alternative for GA pilots.

4.5. Hangar Availability

Twenty of Colorado's 66 system airports cited the need for additional hangar space as one of their top three concerns. In some cases, airports require additional storage capacity to keep pace with growing demands, while others currently have no hangar space available for lease. Erie Municipal (EIK) noted the issue straightforwardly, commenting, "Airport hangars are at capacity. Need additional hangar space." Airports face various challenges associated with hangar development in terms of available space and capital investment costs. Kit Carson County (ITR) has "a number of interested parties that would like to build hangars, but the city cannot afford to build the infrastructure (i.e., taxiways and apron space) to support them." In another type of development challenge, Boulder Municipal (BDU) cited city regulation as the biggest hindrance to development: "land leasing causes people to be uninterested in building hangars and making improvements."

While some airports lack the resources for hangar construction, others are hindered by a lack of available land to expand their current facilities. Blake Field (AJZ) has "filled up the hangar expansion space on [its] west side, tripling the number of hangars in the last 13 years. Once the golf course road access is changed, [AJZ] can continue building on that side." Erie Municipal (EIK), Limon Municipal (LIC), and Vance Brand (LMO) airports find themselves in similar positions.

Several airports specifically commented upon the need for conventional hangars suitable for jet aircraft, particularly those serving visiting skiers in the mountains northwest of Denver. Illustrating the ability of hangars to catalyze additional growth, the Glenwood Springs Municipal (GWS) commented,

> *We have a hangar waitlist of approximately 50 people. There is a demand for hangars, but also a demand for businesses at the airport. If we had more space to operate and the land to build more hangars, we could see businesses such as a flight school, a fully staffed FBO, skydiving operations, and more. A community hangar would be a huge plus and provide a location for local events and education.*

Winter operations at Rifle Garfield County Airport (Brian Condie)

In addition to the economic benefits associated with hangar development, emergency service providers recognized their importance in supporting safety and access. During snowy conditions, Rural Partners in Medicine may drop medical personnel off at one airport, then fly the aircraft to a second airport with transient hangar availability. The aircraft returns to the first airport to pick up staff when they have completed their tasks. The additional costs incurred by the inefficient logistics is passed on to hospitals and patients. In fact, the need for transient hangars to assist with winter operations at small airports was one of the key issues identified during the emergency service provider workshop. These stakeholders specifically identified a need for hangar space and/or deicing equipment at Wray Municipal (2V5), Yuma Municipal (2V6), Walden-Jackson County (33V), Rangely (4V0), Holyoke (HEQ), Julesburg Municipal (7V8), and Astronaut Kent Rominger (RCV) airports, and reported that Erie Municipal (EIK) and Vance Brand (LMO) along the Front Range currently have 10-year hangar waitlists.

The ubiquity of this concern indicates that additional study is warranted to determine if CDOT Division of Aeronautics can provide further support to airports to meet the need for hangars across the state. Hangar development is not excluded from CDOT Division of Aeronautics' Colorado Discretionary Aviation Grant (CDAG) Program; however, economic development projects (capital projects to create revenue through leases) are not traditionally the highest priority for funding.[6] Revenue-producing projects can be funded via the State Infrastructure Bank (SIB) Loan Program, a low-interest revolving loan fund supported by the Colorado Transportation Commission. Additional information about the SIB is available in Section 4.10. Revenue Generation. Airports should also carefully consider the need for future hangar development/expansion during the master planning process.

4.6. Infrastructure Needs

Over half of the airports in Colorado report that they need facility improvements to optimally support airport users. Some airports need improvements to support growing demand, while other airports need improvements to maintain viability for usage over time. Airport and aviation stakeholders most commonly cited the following factors as potentially hindering the operational capabilities of Colorado airports over the 20-year planning horizon of the CASP:

- Runway design
- Taxiway design
- Pavement conditions
- Instrument approach capability

4.6.1. Runway Design

An airport's design is primarily driven by the operational and physical characteristics of the most demanding aircraft that generally operate at the facility (at least 500 operations per year, excluding touch-and-go operations). Jets, for example, generally require a minimum 5,000-foot-long runway (or greater depending on the elevation of the airport and the actual aircraft's operating characteristics) to safely accommodate take-offs, landings, and accelerate stop distances. For Colorado, elevation and mean temperature during the hottest months are critical factors that affect runway length requirements, and the range of temperatures and elevations found in Colorado necessitate individualized runway length analyses for each airport.

During the airport inventory process, some managers reported a disconnect between runway length and the aircraft that generally use them. Vance Brand (LMO), for example, noted that its runway "does not meet [FAA] standards (too short)." This indicates that additional analysis may be warranted to determine the type and extent of facility improvements that may be needed to better accommodate

[6] CDOT Division of Aeronautics. (2019). Programs and Procedures Manual v6.3 (approved January 28, 2019). Available online at www.codot.gov/programs/aeronautics/ProgramProcManual/view (accessed May 2019).

existing operational activities. Rural Partners in Medicine commented that runway length in high-altitude communities is "always" an issue for them.

Similarly, runway improvements were cited as a significant need to allow larger aircraft to use many of the airports in the future. Fremont County (1V6) noted, "Runway length prohibits jet customers from utilizing the airport." Mineral County (C24) commented, "Need to increase runway and build taxiway for future growth, as the area grows every year with interest from charters to make this a featured stop." That airport similarly cited a need to increase the weight limit of its existing runway to support larger aircraft. Emergency service providers reported that aircraft used for aerial firefighting are becoming larger. The Colorado firefighting "arsenal" now includes P-3 Orions (four-engine turboprops) and B747 SuperTankers. These aircraft require stronger runway, taxiway, and ramp load-bearing capacities to operate.

Jet aircraft at Steamboat Springs Airport (Stacy Fain)

Jet activity is associated with revenue generation and economic growth. Yet because those benefits come coupled with the need for more land, increased airport design standards, and the potential for additional noise concerns and environmental impacts, the decision about providing the infrastructure to facilitate jet activity requires detailed analyses. Jet activity could provide a significant economic boost to the communities where these airports are located (assuming the demand exists to regularly support it); however, there are additional costs other than just providing a long enough runway to support regular use by jet aircraft.

Several airports reported issues with hot spots—safety-related problem areas that present an increased risk to pilots and aircraft loss of separation during surface operations. The FAA defines a hot spot as a "location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary." In many cases, hot spots arise due to the airport layout (e.g., confusing runway/taxiway geometry); airport marking, signage and lighting; or situational awareness or training needs. According to the 2019 FAA hot spot report, Colorado has 16 hot spots at seven airports including Aspen-Pitkin County (ASE), Colorado Springs Municipal (COS), Centennial (APA), Denver International (DEN), Rocky Mountain Metropolitan (BJC), Eagle County (EGE), and Grand Junction Regional (GJT).[7] While not identified on the FAA's list for hot spots, Rangely (4V0) reported that its "taxiway/runway separation do not meet B-II standards," which is also an airport design concern (although not a hot spot issue).

It is important that airports examine their geometry in accordance with the latest FAA guidance and evaluate potential changes needed to meet current standards (FAA Advisory Circular 150/5300-13A, Change 1, *Airport Design*). Airports should then work with the FAA to take all reasonable steps to address non-standard conditions. Areas of concern must be clearly identified on airport diagrams, and

[7] FAA. (2019). *Runway Safety Hot Spots List: Airport Diagrams-Hot Spots*. Available online at aeronav.faa.gov/afd/25Apr2019/SW_hotspot.pdf (accessed May 2019).

aircraft surface movements should be properly planned and coordinated with air traffic controllers (where available) and pilots to reduce the potential for incursions.

4.6.2. Taxiway and Ramp Conditions

Airport ramps and taxiways are planned to meet the operational usage of an airport in terms of the type and size of based or itinerant aircraft that are using the airport on a regular basis. If operations exceed what an airport was originally designed to support, the facility can no longer operate at maximum efficiency and may lose operations to nearby facilities. Like runway needs, airports reported the need to expand taxiways and ramps to support growing demand and larger aircraft. Blake Field (AJZ) is actively working to increase business/corporate activity: "With our growth, [AJZ] will need to expand the ramp areas for more and larger aircraft. [It] will additionally need to finish the partial length taxiway to keep the runway clear and rebuild our main ramp." Ramps at airports with high seasonal usage, such as Steamboat Springs (SBS), reach maximum capacity during peak times and have identified ramp expansions as a key need to support existing operations and future growth.

Airports along the Front Range commonly cited congested ramps during firefighting season, which can negatively impact efficient operations during this lifesaving aviation activity. "Ramp expansion for fixed-wing and rotary aircraft including a separate ramp area for a firebase" was one of Central Colorado Regional's (AEJ) primary issues. Fremont County (1V6) also reported that the "ramp becomes too congested during fire activities. More space is needed."

Monte Vista Municipal Airport

In addition to these operational concerns, safety issues can arise as aircraft move in constrained areas. In 2012, the FAA released revised taxiway design standards in AC 150/5300-13A, change 1, *Airport Design* (**Chapter 4. Taxiway and Taxiway Design**) which outlined three primary issues concerning taxiway geometry: three-node, indirect access, and wide expanses of pavement. Each of these concepts are intended to aid in the safe and efficient conveyance of aircraft between parking areas and the runway by promoting pilot awareness to reduce incursions. These and other types of taxiway design issues are reported in the FAA's hot spot report, which notes that 11 of the 16 hot spots in Colorado are related to taxiways and ramps (2019). Hot spot issues range from inadequate distances from ramp to taxiway, congested taxiway intersections resulting in high-volume crossing points, high-density parking areas on ramps, and taxiways being too close to runways. These issues underline the importance of properly planned aircraft movement areas that integrate runways, ramps, and taxiways and allow an airport to safely function at an optimal capacity. Additionally, compliance with the FAA's 2012 taxiway design standard revisions is being addressed during ongoing and planning projects, including master plans.

4.6.3. Pavement Conditions

Airports across Colorado, such as Eads Municipal (9V7), Lamar Municipal (LAA), Monte Vista Municipal (MVI), and Stevens Field (PSO), reported that runway, taxiway, and/or ramp pavement conditions are issues of major concern. Emergency service providers specifically commented that runway resurfacing is necessary at Craig-Moffat (CAG) and specifically the crosswind runway at Lamar Municipal (LAA);

large tankers have difficulty on certain pavements at Rocky Mountain Metro (BJC); and single engine air tanker (SEAT) aircraft have a concern with a dip in the runway at Fremont County (1V6). Pavement condition is critical to safe and efficient aircraft operations, and its upkeep is often one of the most significant capital investments an airport makes. To avoid costly reconstructions or rehabilitations, airfield pavement must be regularly inspected, and preventative maintenance should be conducted at the appropriate time during the pavement's lifecycle. The condition of runway pavement is particularly important due to the speed at which aircraft operate in these areas. Pavement condition is a significant factor in airport safety, and poorly-maintained pavement can damage aircraft as well as increase the need and cost to reconstruct pavements.

To assist in this process, CDOT Division of Aeronautics conducts triennial Pavement Condition Index (PCI) inspections at all Colorado airports that are eligible for CDOT Division of Aeronautics support. The results are used to develop comprehensive airport pavement maintenance plans utilized by CDOT Division of Aeronautics and the FAA in determining capital improvement funding needs and priorities. Maintenance of existing airfield pavement is eligible for Colorado Discretionary Aviation Grant (CDAG) funding which prioritizes airfield movement area pavements. Airports can also utilize CDOT Division of Aeronautics Crack Fill Program that provides financial support to airports who purchase and apply pavement crack fill materials to help offset maintenance costs. Additional information about CDOT Division of Aeronautics' grant programs is available in Section 4.10. Revenue Generation and Funding.

4.6.4. Instrument Approach Capability

An instrument approach procedure (IAP) is a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or the point at which the landing may be conducted visually. Because visual approaches cannot be conducted during Instrument Meteorological Conditions (IMC), IAPs provide all-weather airport access and extend an airport's operability during poor weather. Airports without an IAP cannot support critical services such as emergency access, medical evacuation, and search and rescue operations during inclement weather conditions. An IAP requires specialized airport instrumentation, as well as redundant electrical systems and improved approach area, runway, and taxiway lighting systems in many cases.[8]

Winter military operations at Steamboat Springs Airport (Stacy Fain)

Due to their role in airport safety and resiliency, emergency service providers identified the implementation of instrument approach procedures and the installation of approach lighting as a key priority to facilitate effective and efficient emergency services in Colorado. Airports that identified an IAP as a significant need include Limon Municipal (LIC) and Steamboat Springs (SBS). These two airports plus Harriet Alexander Field (ANK) were also noted during the emergency service provider workshop as needing instrument approach procedures. Rural Partners in Medicine also recognized the need to improve airports'

[8] FAA. (2016). United State Standard for Terminal Instrument Procedures (TERPS), Order 8260.3C. Available online at www.faa.gov/documentLibrary/media/Order/FAA_Order_8260.3C.pdf (accessed 30 April 2019).

operability during inclement weather. However, the organization observed that this issue may be mitigated as airports adopt the FAA's ADS-B NextGen requirements, which will reduce associated visibility minimums.

For additional information about NextGen, as well as obstacles that some rural airports may face during deployment, see Section 4.11. Technology.

4.7. Land Use Planning and Encroachment

As population and industry continue to grow, so too does the demand for land development. As new residents move into an area, residential and commercial developments generally sprawl outward. Housing, schools, medical facilities, roads, retail establishments, and many other types of institutions are constructed or expanded to meet the new population's needs, governed by land use regulations generally designed to ensure capability between adjoining or nearby types of development. It is up to a city, county, or other jurisdictional authority to ensure that activities on one parcel of land do not negatively impact activities occurring in its vicinity in terms of safety, nuisance, or otherwise.

Airport land use compatibility practices are designed to promote the safety of aircraft, their passengers, and the people and property on the ground, as well as mitigate the potential nuisance associated with overhead aircraft operations. The FAA has established airport compatible land use guidelines that consider the unique safety and noise issues inherent to incompatible development within the vicinity of an airport. The Transportation Research Board's (TRB) *Airport Cooperative Research Program (ACRP) Report 27: Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources* provides guidance to help protect airports from incompatible land uses that impair current and future airport and aircraft operations and safety. *Volume 2: Land Use Survey and Case Study Summaries* includes 15 case studies targeting a wide range of airports and land use issues covering a geographically diverse set of large commercial service, military, and GA airports.[9] While airport land use compatibility guidelines are well established, the authority to codify into regulation and enforcement falls to the local level. An airport is faced with land use compatibility issues when development occurs in its vicinity that does not align with the best practices identified by the FAA and TRB, or when adjacent development simply leaves no space for the airport to expand. Land use incompatibility can lead to degraded airport operations, limited economic development opportunities, lost value of public investment, decline in transportation access, and increased safety risks.

Airports throughout Colorado report that they are losing the potential for growth because of encroachment from residential and commercial properties spurred by the state's population increases and shifting migration patterns. Most notably, airports in the Front Range are simultaneously losing their ability to expand while facing increased pressure to meet the growing demands for aviation

[9] Both ACRP documents are available online at www.trb.org/Publications/Blurbs/163344.aspx (accessed July 2019).

services in their region. Major developments planned for the Front Range include large residential growth around airports, which could in turn hinder their abilities to expand operations. As Centennial (APA) notes, “Continued robust economic activity will drive growth at Centennial for years to come but at a price: residential encroachment requires compatible land use planning to remain successful.” Lands surrounding Colorado Springs Municipal (COS) and Meadow Lake (FLY) airports are being rapidly converted to residential development, prompting significant concerns by the airports, CDOT Division of Aeronautics, and local government officials.

Colorado Springs Municipal Airport

In December 2018, the Pikes Peak Area Council of Governments (PPACG) released the Colorado Springs Regional Joint Land Use Study (JLUS) which recognizes the multiple jurisdictions and mixed land uses found within the area.[10] A collaborative effort between the communities within El Paso, Fremont, Pueblo, and Teller counties including five military installations (U.S. Air Force Academy, Fort Carson, Peterson AFB, Cheyenne Mountain Air Station, and Schriever AFB), the study identified multiple land use and safety compatibility issues between civilian and military activities. Many of these issues relate to navigable airspace and other flight operations. The JLUS implementation strategies include (but are not limited to) the need for increased communications and collaboration between military and civilian stakeholders, additional mapping and data tools to manage encroachment issues, and formalized policies to minimize incompatible land uses and development affected by military flight operations.

While seemingly ubiquitous in Colorado’s urban core, this issue can arise in any area where aviation activities and nearby land uses come into conflict. A recently constructed hospital adjacent to Meeker/Coulter Field (EEO) has raised concerns about the airport’s future expansion potential, as well as noise and safety issues specific to hospitals.

Local governments can take an active role in land use planning and control by enacting and enforcing airport-compatible height and land use zoning. Colorado Revised Statutes (CRS) Section 43-10-113*, Safe Operating Areas Around Airports – Establishment* directs government agencies with zoning and building permit authority to protect land areas from height obstructions into navigable airspace as defined in 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of Navigable Airspace*. CRS Section 43-10-103, *Division of Aeronautics – Duties*, directs CDOT Division of Aeronautics to assist the FAA and local governments in identifying and controlling these potential obstructions. Airports can also access SIB Loan Program funds to acquire land to protect from incompatible land uses.[11] Additional information about airport compatible land use and control is provided in **Chapter 3. Supplemental System Context**.

[10] PPACoG. (2018). *Colorado Springs JLUS.* Available online at www.ppacg.org/jlus-study-report/ (accessed July 2019).
[11] CDOT Aeronautics. (28 January 2018). *Program and Procedures Manual, v6.3.* p. 41. Available online at www.codot.gov/programs/aeronautics/ProgramProcManual/view (accessed July 2019).

4.8. Pilot / Aviation Workforce Shortage

System Viability Economic Sustainability

As the demand for air travel increases, so too does the need for qualified aviation professionals including pilots, mechanics, air traffic controllers, and others. Over the past 60 years, the overall U.S. labor pool has been on the decline, and fewer former military personnel are available for transition from military to civilian employment to fill positions in the aviation industry. At the same time, the global economy is growing and increasingly competitive, exacerbating the demand for skilled workers.[12] Additionally, other changes, such as the need for some college, military experience, and/or specialized training and licensure, can deter or prevent a potential student or professional from pursuing a career in aviation. With a demanding workplace and little room for error, "the complexities of the system require a workforce that is highly educated, trained, and experienced."[13]

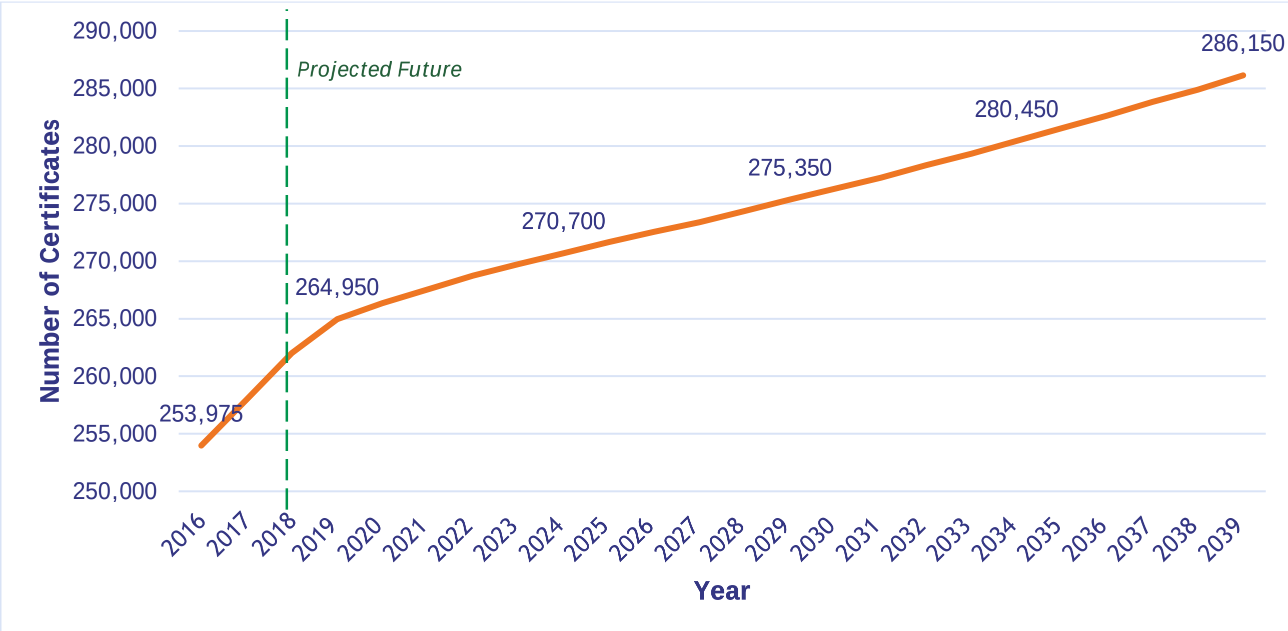
4.8.1. Pilots

Nearly all CASP stakeholders identified the international pilot shortage as an issue of major concern for the Colorado aviation system. By 2022, nearly 20,000 U.S. airline pilots will reach the FAA's mandatory retirement age of 65, causing ripple effects throughout the entire U.S. economy.[14] The industry has faced a number of challenges over the last several decades, including new regulations that increased flight time requirements for commercial pilots, fewer military-trained pilots entering a civilian aviation career, and high educational costs coupled with low starting salaries for new pilots. As a result of these and other issues, student pilots are not matriculating quickly enough to fill commercial pilot positions. Further exacerbating the issue, the need for pilots continues to grow as demand for aviation services increases domestically and abroad. This issue was noted by several airports and 11 of the 20 respondent groups interviewed as part of the CASP, including the PAC.

While demands are not currently being met, the FAA's *Aerospace Forecast Fiscal Year 2019-2039* indicates that the impending crisis may by waning: The number of all pilot certificates except rotorcraft- and recreation-only certificates is rising.[15] Most pertinently, the number of commercial and air transport pilots (ATP) has increased over the last two years and is anticipated to continue to do so through the 2039 forecast horizon. **Figure 4.3** depicts the historical and future number of commercial and ATP certifications in the U.S.

[12] TRB. (July – August 2016). *The Aviation Workforce of Tomorrow.* Available online at onlinepubs.trb.org/Onlinepubs/trnews/trnews304feature.pdf (accessed July 2019).
[13] Ibid. p. 8.
[14] Aviation Week Network. (2015). *The Coming U.S. Pilot Shortage is Real.* Available online at aviationweek.com/commercial-aviation/coming-us-pilot-shortage-real (accessed May 2019).
[15] FAA. (2019). *Aerospace Forecasts: FY 2019-2039*. Available online at www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2019-39_FAA_Aerospace_Forecast.pdf (accessed May 2019).

Figure 4.3. Historical and Projected Future U.S. Commercial and ATPs (2016 - 2039)



Source: FAA Aerospace Forecast 2019-2039

Indications likewise suggest that the number of student pilot certificates are growing, although the FAA's student pilot forecast is currently suspended. The number of student pilots has been affected by two recent regulatory changes (in 2010 and 2016), which have cumulatively resulted in significant growth in the number of student pilots from 119,119 in 2010 to 167,804 in 2018. It is important to note that the 2016 change removed the expiration date on new student pilot certificates and effectively broke the link between students and advanced certificate levels of private pilot or higher. The FAA reports that the 2016 change is too new to perform a reliable forecast for student pilots.

4.8.2. Maintenance Technicians

Critical for the safe continued operation of aircraft, aircraft maintenance technicians must complete 18 months of practical work experience applicable to either an airframe or power plant rating. If a technician wants to earn both ratings, they must complete a certified aviation maintenance program or demonstrate 30 months of applicable experience. Each rating requires 400 hours of general course work and 750 hours related to airframe or power plant technology. This education can be obtained at several collegiate programs across the country that offer two-year technical degrees in aircraft maintenance. Not only are airlines and aircraft maintenance, repair and overhaul (MRO) firms hiring technician graduates, other industries (such as the automobile industry) are also hiring graduates creating competition for a limited technician workforce.

4.8.3. Air Traffic Controllers

Strict medical and psychological screening, age, educational, and work experience requirements limit the potential pool of future air traffic controllers. A required retirement from active duty at age 56 also contributes to the need for a new generation of controllers, while controllers are not able to start after age 31. It is expected that nearly 12,000 of the 14,000 current controller workforce will be lost by 2026.[16]

4.8.4. Airport Operators

The operational requirements of each airport facility vary based on the type of operations supported. For example, airports that serve air carrier operations must meet a variety of strict operational requirements to maintain certification. An airport operator must undergo training in a variety of focus areas including airfield inspections, pavement maintenance, wildlife control, security, snow and ice control, and more.

4.8.5. Colorado Response

CNCC students at the Rangely Airport

While recent trends show positive growth in terms of student and matriculated pilots, it is essential that federal and state government officials, airports, educational institutions, and private industry work to mitigate the financial and other barriers for students considering a career in aviation. Colorado has developed some interesting pilot training programs that are affordable and incentivize pilots to stay within the region upon receiving their license. Colorado Northwestern Community College (CNCC) conducts its Aviation Technology Flight program from the Rangely Airport (4V0). Students can receive a range of certifications from Private Pilot to Certified Flight Instructor. Additionally, CNCC's partnership with Metropolitan State University at Denver (MSU) allows students to conduct their flight training portion of a Bachelor of Arts in aerospace from MSU at the CNCC facility. This partnership allows for the costs of the program to be among the lowest in the nation. CNCC also offers the Aviation Maintenance Technology Program, a 21-month, FAA-certified (FAR Part 147) training for aircraft mechanics. CDOT Division of Aeronautics also currently partners with Colorado airports to support internship programs as well as supporting various aviation education efforts through the Aviation Education Grant Program. These programs support aviation education as prescribed by CDOT Division of Aeronautics' enabling legislation, CRS Section 43-10.[17] With programs like these, Colorado is on the leading edge of addressing one of the biggest potential threats facing the aviation industry in the coming decades.

The Metropolitan State University of Denver (MSU) Department of Aviation and Aerospace Science is one of the nation's most prestigious aviation education programs and is the largest program in Colorado. MSU Denver Aviation has approximately 650 enrolled students that can choose from eight unique degrees. MSU operates the Aeronautics and Aerospace Systems Laboratories, which offers simulation technology for flight training, air traffic control, satellite engineering, aerospace operations and unmanned aerial systems (UAS). MSU Denver is focused on professional development and maintains strong relationships with seven airlines, three international aerospace contractors, multiple professional organizations, Denver International Airport, and the CDOT Division Of Aeronautics.

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[16] TRB. (July – August 2016). p. 10.

[17] CDOT Aeronautics. (2018). 2018 Annual Report. Available online at www.codot.gov/programs/aeronautics/PDF_Files/AnnualReports/2018-annual-report (accessed July 2019).

4.9. Public Engagement / Government Support

System Viability
Economic Sustainability

Publicly owned airports depend on the support of their communities which, in turn, drives the support and engagement of local and state policymakers. A level of understanding into the value of aviation is required to justify the funding necessary for major capital improvements and operating costs, as well as the regulations needed to ensure that airports can operate safely and efficiently with neighboring development. This is particularly important at airports without robust revenue streams, as local matches are required for both state and federal funding (see Section 4.10.1 for additional information). With community buy-in and local government support, it is more likely that airports will receive financial support during local budget preparations.

Community aviation expo flyer, Glenwood Springs Municipal Airport

Some airport managers and stakeholders find it difficult to demonstrate the value of aviation to the community. Without that demonstrable value, community members and local government agencies can be dismissive of their airport's needs. The Colorado Aviation Business Association notes that there is a general negative perception of the aviation system, particularly non-commercial aviation, amongst citizens and local officials. Furthermore, some local officials see airports as an expensive nuisance that takes funding away from other items in the transportation budget. The Colorado Pilot's Association cited cases in which municipal officials have become unfriendly toward their local airports; that hostility has led to funding reprioritizations that put airports at a disadvantage. CNCC pointed out that many communities do not see the value of their local GA airport unless there is an emergency. Despite such examples, bright spots do exist: OEDIT specifically lauded the support that the aviation industry receives across the Front Range, which is a well-established aviation hub in the state. The western and southwestern slopes, on the other hand, may need more community and local government support to ensure continued aviation development in those regions.

It is likely that the relationship between local officials and airports is less based on hostility than a lack of understanding of the economic and quality-of-life benefits that airports bring to their communities. Recognizing the importance of communicating the value of airports to local communities and the entire state, CDOT Division of Aeronautics prepared the Colorado Aviation Economic Impact Study (CEIS) in 2008, 2013, and an update is currently underway in conjunction with the CASP. The CEIS includes development of airport-specific outreach materials that identify the qualitative and quantitative benefits of airports to their specific communities. These materials include information for key target audiences such a policymakers and community members whose lives have been enhanced through aviation. A new program put together by CDOT Division of Aeronautics will also offer an educational "Governance 101" class for elected officials in communities with airports. Furthermore, CDOT Division of Aeronautics proactively partners with state agencies and local communities to ensure that the state's aviation system supports the broader transportation system for all Colorado residents, businesses, and visitors.

4.10. Revenue Generation and Funding Challenges

More than one-third of airports and CASP participants reported revenue generation and funding challenges as one of the most important issues facing the Colorado aviation system. Most of the other issues reported can be traced back to a lack of resources available to provide the facilities and services required to meet all aviation user needs. System airports face two interrelated obstacles when trying to obtain adequate resources: public funding and revenue generation. Each of these issues are discussed in turn in the sections that follow.

4.10.1. Public Funding Sources

In general, airport funding is available through the federal Airport Improvement program (AIP); state and local grants; and airport operating revenue from tenant lease agreements, fuel sales, landing fees, and other revenue-generating activities. Access to these various sources depends on several factors including but not limited to airport ownership, inclusion in the FAA's National Plan of Integrated Airport Systems (NPIAS), and eligibility for various state and local funding sources. Project eligibility can likewise differ by funding source. As a result, many airports are faced with funding shortfalls, especially as existing facilities no longer align with shifting demands over time and major capital improvements are required.

The AIP provides federal grants for planning and development to airports included in the NPIAS, and funding is usually limited to improvements related to aircraft operations. Revenue-producing projects, such as hangar storage and fuel farms, are eligible for AIP funding; however, funding is only available after higher priority pavement projects are completed—which is almost never the case. NPIAS airport sponsors who accept AIP grants must also accept 39 grant assurances regarding future airport operations. If an airport is unable to comply with these obligations through the life of the project, the sponsor is required to pay the grant amount back to the FAA.

While there may be some disadvantages when accepting AIP funds such as the grant assurance requirements, these federal entitlements and discretionary funds provide an important and ongoing funding source to NPIAS airports. This is especially the case for GA airports that do not provide scheduled commercial service. Capital improvement projects can be undertaken with only a minor local match ranging from just five percent at certain economically disadvantaged communities to a maximum of 30 percent with 10 percent being the norm for most airports.[18] Most of Colorado's 49 NPIAS airports rely on AIP funding, yet these dollars rarely signify that all of an airport's needs have been met. Pueblo Memorial (PUB) commented, "Current federal funding methods are skewed toward passenger enplanement numbers," explaining that a relatively low percentage of the airport's 20,000 annual operations are scheduled commercial service. Because funding is based on enplanements, current funding mechanisms are inadequate to address the unique needs of their facility: "To put this

[18] Congressional Research Service. (2019). *Financing Airport Improvements.* Available online at fas.org/sgp/crs/misc/R43327.pdf (accessed May 2019).

in perspective, the fixed base operator [FBO] provides more revenue to the airport than commercial operations."


Cortez Municipal Airport

Colorado's 17 non-NPIAS publicly owned airports exclusively rely on non-federal funding sources to ensure their facilities remain in safe operating conditions for the flying public. Without access to federal entitlement or discretionary funds, non-NPIAS airports are at a notable disadvantage in terms of keeping pace with both ongoing maintenance needs and improvements to enhance capacity. CDOT Division of Aeronautics provides funding to all Colorado airports owned by a public agency regardless of inclusion in the NPIAS, as well as privately owned NPIAS facilities. To be used "solely for aviation purposes," these funds are disbursed via the CDAG Program, statewide initiatives, and fuel tax disbursements, pursuant to the program-specific eligibility requirements defined in CRS 43-10-103(4), 43-10-105, 43-10-108.5(2), 43-10-108.5(5), and 43-10-110.[19]

The CDAG Program is the primary vehicle for state discretionary funding and is designed to maintain and improve the statewide aviation system. To qualify for this type of discretionary funding, the proposed project must be consistent with the airport's role in the CASP and included in its five-year capital improvement plan (CIP). Like the NPIAS, airport sponsors must agree to certain state grant assurances to "encourage the safe and efficient operations of airports" for the expected lifetime of the project. In general, AIP-funded projects at NPIAS airports receive 90 percent federal funding with the remainder being split between the state and local sponsor. CDAG-funded airport project costs are shared between the state and local airport sponsors via a 90/10 percent split. While many factors influence grant awards, projects with a higher percent local match are more likely to receive funding.[20]

This brief overview of federal and state funding availability highlights the major challenges that some small GA and non-NPIAS airports face when trying to secure funding for facility improvements or expansions. Since non-NPIAS airports do not receive federal funding, and local sponsors are responsible for a higher percentage match on CDAG-funded projects as compared with their NPIAS counterparts who may receive state matching grants to help offset federal grant match requirements, the non-NPIAS airports struggle to come up with local funding that is the primary source for funding many projects. This issue can be exacerbated at airports that receive little or no local community support. Residents and policymakers may undervalue the benefits of GA, lack funds for a local match, or, in some cases, be actively working to close the airport.

Local matching dollars are simply not available in many economically disadvantaged, often rural, areas of the state. These communities find it difficult to set aside money for the local match and deferred maintenance needs may grow over time. The Colorado OEDIT expressed a similar concern, noting that there is an overall lack of funding to support improvements for rural airports. Cortez Municipal (CEZ)

[19] CDOT Division of Aeronautics. (2019). Programs and Procedures Manual v6.3 (approved January 28, 2019). Available online at www.codot.gov/programs/aeronautics/ProgramProcManual/view (accessed May 2019).
[20] Ibid. p. 13.

articulated the issues clearly: "Small airport means small revenue. Entirely reliant upon federal involvement for capital improvements. Only the smallest of projects can be handled at a local level, and they must be with the help of the [CDAG] Program."

In addition to airports' abilities to access public funding through these various funding sources, each mechanism defines the type of project eligible to receive grant money. Airports such as Centennial (APA), Durango–La Plata County (DRO), and Grand Junction Regional (GJT) have unmet needs due to project ineligibility. Secondary and crosswind runways, additional ramp space, and other projects were all reported as either ineligible for FAA funding or too low in the priority rating system—leaving unmet needs at airports across the state.

On a broad scale, Colorado's significant growth has left airports struggling to keep pace with growing demands. Echoing the sentiments of many airports, Durango–La Plata County (DRO) commented,

> *DRO has seen its enplanements more than double in the past 15 years, and demand continues to grow. Facilities must be expanded to meet this demand, but the cost of development is outpacing the funding mechanisms available to many regional airports. A rigid Passenger Facility Charge (PFC) cap and stagnant AIP funding have resulted in deferred projects at DRO. Non-aeronautical revenue, which is a key driver of capital investment funding, can be difficult to generate outside of high-volume markets.*

Funding issues prompted Denver International (DEN) to pursue a 34-year public-private partnership (P3) contract for the massive Great Hall project valued at approximately $1.8 billion. The renovation will expand capacity of the terminal to support 80 million passengers annually, modernize and relocate the security screening areas, consolidate the airlines' ticket counters, and create additional revenue-producing concession areas. As part of the partnership, Ferrovial Aeropuertos and its partners will make a total investment of an estimated $378 billion to be paid back over time through a combination of payments and a 20 percent share of concession revenues for 30 years.[21] The deal has provided a solution to the airport's capacity concerns and funding shortfalls, but the deal has brought some criticism due to the loss of revenue for the airport, particularly over the long term.[22] The airport had evaluated other options and determined that this P3 was the best option to get the project underway in the near term to provide the needed capacity.

Fuel at Craig-Moffat Airport

Like many types of public infrastructure, public funding will likely always be a challenge for airports. The complexity of the Colorado aviation system with its strong urban/rural divide and mountainous terrain only increases the challenge of prioritizing funding to the various airport capital improvement needs. Airports, funding agencies and other aviation stakeholders should regularly monitor communities' abilities to equitably

[21] "Denver airport P3 approved." (18 August 2017). Available online at www.infrapppworld.com/news/megaproject-991-denver-airport-p3-approved (accessed July 2019).

[22] Murray, Jon. (2017). "As vote looms on $1.8 billion Denver International Airport project, a question hangs in the air: Is it a good deal?." Available online at www.denverpost.com/2017/08/06/denver-international-airport-terminal-partnership-renovation-city-council-vote/ (accessed July 2019).

access federal and state funding, so all regions and communities can safely access the economic and quality of life benefits provided by aviation.

4.10.2. Revenue Generation

Some airports generate revenue via on-airport activities such as land leases for aeronautical and non-aeronautical purposes and fuel flowage and landing fees. Self-sufficiency is a goal of most airports, and local sponsors are constantly working to find innovative ways to generate revenue in support of their operations. Revenue generation is particularly important for GA airports, as they do not collect PFCs and non-NPIAS airports do not receive federal AIP entitlements or discretionary funds (as described above). Because revenue-generating projects are often ineligible for federal funding, local sponsors are typically responsible for making initial capital investments. CDOT Division of Aeronautics does have the ability to fund revenue-generating projects which provides an opportunity to assist airports, however, it is dependent on available state funding and other priorities. Alternatively, airports can partner with third-party private investors (often via a ground lease) to provide the amenities that draw pilots and aircraft owners such as hangar space, fuel, and FBOs and other aviation-related businesses. The ultimate return on these partnerships may not be as lucrative as self-funded revenue-enhancing endeavors, although associated risks may be lower.

Solar array at Rifle Garfield County Airport

In addition to aviation-related activities, airports can also implement non-aviation-related strategies such as providing parking, ground transportation, or rental cars; offering concessions and retail opportunities; selling advertising space; leasing land for renewable energy production; and promoting compatible commercial development such as office buildings, business parks, and hotels.

The viability of these strategies is highly dependent on location, with more opportunities generally available to urban airports and those located within close proximity to tourism destinations (e.g., ski areas), as well as obtaining FAA consensus for NPIAS airports.

During the inventory process and stakeholder interviews of the CASP, three key trends emerged closely associated with available funding and revenue generation: the ability to support larger aircraft, hangar availability, and fuel availability. As aviation stakeholders consistently recognized these items as critical to the ability of the system to support existing and future needs, each has been discussed separately in the body of this chapter (see sections 4.3, 4.5, and 4.4 respectively).

4.11. Technology

Technological changes designed to make the country's skies safer, more secure, and better able to meet current demands are impacting all facets of the aviation industry. This section discusses the two main technological advancements most predominately cited by Colorado aviation system stakeholders as being of highest concern: UAS and NextGen.

Safety and Efficiency

Economic Sustainability

4.11.1. Unmanned Aerial Systems

While UAS are relatively new to the U.S. airspace system, they have become immensely popular for recreational, commercial, and governmental use. The Colorado Oil and Gas Association, for example, uses drones to inspect oil fields. One operator at a Colorado airport reported using his drone to count remote cattle herds. The FAA has established some regulations governing the use of drones, including mandating recreational users fly at or below 400 feet when in uncontrolled (i.e., Class G) airspace and outlawing flight near most airports. In May 2019, the FAA implemented a new rule that requires drone operators to obtain preauthorization before flying in controlled airspace around airports. This new requirement replaces an old requirement that simply mandated that drone operators notify the airport operator and ATCT prior to flying within five miles. Preauthorization will eventually be available through the Low Altitude Authorization and Notification Capability (LAANC) system; until that system is operational recreational flyers who want to operate in controlled airspace may only do so at fixed sites. Recreational flyers must also pass an aeronautical knowledge and safety test before flying.[23] Despite these steps, some aviation stakeholders believe that current rules are insufficient and UAS operators are either unaware of or noncompliant with them.

The Colorado Agricultural Aviation Association (CAAA) is particularly concerned about the threat of mid-air collision during low-altitude agricultural application. The CAAA is not alone in this concern; in fact, the Colorado Pilots Association, CNCC, the UCAR Research Aviation Facility, and emergency services providers all noted serious concerns about unregulated drones interfering in shared airspace and associated safety concerns for regulated aircraft operations. It is interesting to note that no airport in the Colorado system reported UAS as an issue of significant concern, although many had implemented communications procedures so operators could inform airport administrations of ongoing operations near their airfields.[24] To further investigate the potential impacts of UAS in Colorado, CDOT Division of Aeronautics is preparing to conduct the Urban Air Mobility (UAM) study. This study will assess how UAS may impact airspace operations, as well as demand for air taxi and scheduled commercial services.

UAS Colorado is a non-profit business league that supports and promotes the safe integration of UAS into the aerospace industry by working together with public agencies, private firms, and government entities to establish designated flight testing areas around the state. Two such areas are located in Chaffee County near Buena Vista and in the San Luis Valley north of Alamosa. The San Luis Valley testing area encompasses 8,100 square miles of operational airspace up to 15,000 feet while the Chaffee County testing area allows UAS to fly in the Arkansas Valley outside a five-mile radius from Harriet Alexander Field (ANK) in Salida and Central Colorado Regional Airport (AEJ).

[23] FAA. (16 May 2019). "FAA Highlights Changes for Recreational Drones." Available online at www.faa.gov/news/updates/?newsId=93769 (accessed July 2019).

[24] Airport sponsors and ATCTs are no longer authorized to give permission for UAS to operate in their vicinity per the FAA's most recent (May 2019) rule mandated under the FAA's Reauthorization Act of 2018 as described in the preceding paragraph.

4.11.2. NextGen Air Transportation System

NextGen is a long-term plan by the FAA to transform the way the U.S. air transportation system operates. Very broadly, it aims to shift air navigation from a ground-based to a satellite-based system through the modernization of aircraft tracking, communication, and weather-monitoring and forecasting systems. The benefits of this transformation include shorter flight routes, increased operational efficiencies, reduced fuel consumption, reduced congestion and delay, reduced environmental impacts, airport and airspace capacity maximization, and greater aircraft safety.

Despite the many positives associated with NextGen implementation, there are equity concerns when considering the roll-out of new technology. The most pressing current issue associated with NextGen deployment is the upcoming Automatic Dependent Surveillance-Broadcast (ADS-B) requirements. The FAA has mandated that all aircraft operating in airspace defined in 14 CFR Section 91.225 become ADS-B out equipped by January 1, 2020. This requires the installation of a specialized out transmitter and a compatible global positioning system (GPS) position source. While the deadline is looming, a small percentage of aircraft have met this requirement. An insufficient number of aviation professionals are available for installation and many older aircraft may be challenged to adapt to the new technology.

Beyond the requirements for aircraft, some airports may struggle to adapt to the changing technologies of NextGen. As has been discussed, there is a strong urban/rural divide in Colorado, with many rural and GA airports throughout the state struggling to maintain existing facilities. If this pattern of uneven development continues, significant discrepancies may arise during NextGen deployment. If smaller GA operators at airports do not have the means to acquire NextGen technology, these airports may be at a further disadvantage within the system and GA operations could further decrease. NextGen may be a promising technological advancement in many ways for the aviation industry, but it will be important to closely monitor how these technological advancements have the potential to impact the Colorado aviation system in the long-term.

4.12. Summary

In the coming decades, Colorado is anticipated to outpace much of the rest of the nation in terms of population and economic growth, and the state already sits on the cutting edge of technological advancements that will shape the future of our nation’s airspace. CDOT Division of Aeronautics, airports, and the many users who rely on the state’s aviation system must continue to take a proactive planning approach to keep pace with these rapid evolutions. Because many of the trends identified by this study affect urban and rural areas differently, strategies should be identified to ensure equitable access to all aviation services in the coming decades. These issues will be carefully considered during the development of the CASP’s final recommendations and highlighted when relevant to specific performance measures analyzed in subsequent phases of this study.

CHAPTER 5: Airport Role and Classification Analysis

2020 Colorado Aviation System Plan

Chapter 5. Airport Role and Classification Analysis

5.1. Introduction

Identifying how individual airports function within a state system is the basis of a system plan. If airports are planned and developed within the context of an integrated system, each airport can effectively support a sub-set of aviation activities without impacting service levels within specific regions or communities. Airport planning from the system-wide perspective identifies areas where specific aviation functions are sufficient, inadequate, or duplicative in terms of meeting existing and future aviation demands to support informed decision-making and resource allocation.

Colorado's airport classification structure is designed to establish a network of facilities that supports the state's safety, mobility and access, and economic sustainability goals while supporting the long-term viability of all airports within the system. The airport classification process recognizes that all airports contribute to the system; however, the level and type of contribution varies amongst airports due to numerous factors. These factors can be attributed to an airport's own characteristics, such as runway length, hangar and fuel availability, and instrument approach capability, or driven by external conditions that affect the type and volume of aviation activity that occur there. External factors may include proximity to commercial markets, other airports, and population centers or the socio-economic characteristics of surrounding communities. Because each airport within a system plays a different role, the availability of facilities and services must align with what an airport is and how it functions.

At the inception of this 2020 Colorado Aviation System Plan (CASP), the Colorado Department of Transportation (CDOT) Division of Aeronautics determined the existing airport classification methodology no longer met the needs of the state or its airports. This methodology was first developed during the 2000 Colorado Inventory and Implementation Plan and later revised during the 2005 and 2011 CASP updates. This chapter aims to classify each system airport in a manner that aligns with the current needs and policies of the Colorado system. Following a review of federal methodologies, types of classification methodologies, and an evaluation of Colorado's existing classification system, the 2020 CASP takes a fresh approach to classify airports in a manner that reflects existing conditions and anticipated growth. Facility and service objectives that correspond with the 2020 CASP airport classifications and are used to guide future airport development needs are documented at the end of the chapter.

The information in this chapter is presented as follows:

- Federal Classifications
- Types of State Classification Methodologies
- 2011 CASP Roles
- 2020 CASP Classifications
- Facility and Service Objectives

5.2. Federal Classifications

Airports are classified at the state and federal levels to reflect the diverse roles that airports play in each of these spheres. Depending on the unique needs of the airport system, federal and state classifications can be identical, partially overlap, or be completely different. The following section explains the federal classification system established by the Federal Aviation Administration (FAA) known as the National Plan of Integrated Airport Systems (NPIAS).

5.2.1. National Plan of Integrated Airport Systems

The *Report to Congress, NPIAS 2019-2023* (*2019-2023 NPIAS*) is the latest publication from the FAA that identifies 3,321 existing and seven proposed public-use airports as significant to the national air system (3,328 total). These airports encompass all types of landing areas specifically developed for conventional fixed-wing aircraft, helicopters, and seaplanes.[1] Ninety-eight percent of NPIAS airports are publicly owned (3,249), while two percent (72) are owned by private entities. These airports serve various functions within the system, and each plays an integral role in the economic, social, and/or physical well-being of the residents of and visitors to the U.S., as well as the private and public institutions that operate within its borders. Most NPIAS airports are eligible to receive federal entitlement and discretionary funds through the Airport Improvement Program (AIP) for planning and development projects including improvements related to enhancing airport safety, capacity, security, and environmental concerns.[2]

As summarized in **Table 5.1**, NPIAS airports are defined as either Primary or Nonprimary. Primary airports are defined as receiving scheduled air carrier service with 10,000 or more enplaned passengers per year. Primary airports are subdivided based on the percent of total U.S. enplanements (i.e., passengers boarding an aircraft) annually occurring at their facility. There are 380 Primary airports in the U.S. Nonprimary airports encompass Nonprimary Commercial Service, Reliever, and General Aviation (GA) airports and are generally defined in terms of activity type and level. The 2,941 Nonprimary airports included in the latest NPIAS account for 59 percent of the active GA fleet, 64 percent of aircraft operations, and 38 percent of the AIP-eligible development through 2023.[3]

Table 5.1. NPIAS Classifications

Type	Definition
Primary: Scheduled air carrier services with 10,000 more enplanements[1]	
Large Hub	One percent or more
Medium Hub	At least 0.25 but less than 1.0 percent
Small Hub	At least 0.05 but less than 0.25 percent
Nonhub	Less than 0.05 percent but more than 10,000
Nonprimary	
Commercial Service	Public airports receiving scheduled passenger service and at least 2,500 but no more than 10,000 enplaned passengers per year
Reliever	Public or private airports designated by the FAA to relieve GA traffic congestion at nearby commercial service airports and provide improved GA access to the overall community
GA	Public-use airports that do not have scheduled air carrier service or have less than 2,500 enplanements

Note: [1]Subcategories defined in terms of percent of total U.S. enplanements.
Source: FAA NPIAS, 2019–2023

[1] FAA 2019-2023 NPIAS. p.2.
[2] FAA. (2017). Overview: What is AIP? Available online at www.faa.gov/airports/aip/overview/#eligible_projects (accessed April 2019).
[3] FAA 2019-2023 NPIAS. p.7.

There are 49 airports in Colorado included in the *2019-2023 NPIAS*. This report determines airport classifications in the NPIAS for years 2019 and 2020 utilizing data from 2016; it is biennially updated, and the next report will be released in 2021. The total number of NPIAS airports within each classification is presented in **Table 5.2**, along with an example of a Colorado airport in that classification.

Table 5.2. Total NPIAS Airports (U.S. and Colorado)

Classification	No. of Airports		Colorado Airport Example
	U.S.	Colorado	
Primary			
Large Hub	30	1	Denver International
Medium Hub	31	0	Not Applicable (NA)
Small Hub	72	1	Colorado Springs Municipal
Nonhub	247	7	Eagle County Regional
Sub-Total	**380**	**9**	-
Nonprimary			
Commercial Service	126	3	Cortez Municipal
Reliever	261	4	Rocky Mountain Metropolitan
GA	2,554	33	Colorado Plains Regional
Sub-Total	**2,941**	**40**	-
Total	***3,321***	***49***	

Source: FAA NPIAS, 2019-2023

Table 5.3 presents the current (2019-2023) FAA classifications for all NPIAS airports in Colorado.

Table 5.3. Colorado's 2019-2023 NPIAS Airport Classifications

Associated City	Airport	FAA ID	FAA Classification
Primary			
Aspen	Aspen-Pitkin County	ASE	Nonhub
Colorado Springs	Colorado Springs Municipal	COS	Small
Denver	Denver International	DEN	Large
Durango	Durango-La Plata County	DRO	Nonhub
Eagle	Eagle County Regional	EGE	Nonhub
Grand Junction	Grand Junction Regional	GJT	Nonhub
Gunnison	Gunnison-Crested Butte Regional	GUC	Nonhub
Hayden	Yampa Valley	HDN	Nonhub
Montrose	Montrose Regional	MTJ	Nonhub
Nonprimary			
Akron	Colorado Plains Regional	AKO	GA
Alamosa	San Luis Valley Regional	ALS	CS
Boulder	Boulder Municipal	BDU	GA
Buena Vista	Central Colorado Regional	AEJ	GA

Associated City	Airport	FAA ID	FAA Classification
Burlington	Kit Carson County	ITR	GA
Canon City	Fremont County	1V6	GA
Colorado Springs	Meadow Lake	FLY	Reliever
Cortez	Cortez Municipal	CEZ	CS
Craig	Craig-Moffat	CAG	GA
Delta	Blake Field	AJZ	GA
Denver	Centennial	APA	Reliever
Denver	Rocky Mountain Metropolitan	BJC	Reliever
Denver	Colorado Air and Space Port	CFO	Reliever
Erie	Erie Municipal	EIK	GA
Fort Collins/Loveland	Northern Colorado Regional	FNL	CS
Fort Morgan	Fort Morgan Municipal	FMM	GA
Granby	Granby-Grand County	GNB	GA
Greeley	Greeley-Weld County	GXY	GA
Holyoke	Holyoke	HEQ	GA
Kremmling	Mc Elroy Airfield	20V	GA
La Junta	La Junta Municipal	LHX	GA
Lamar	Lamar Municipal	LAA	GA
Leadville	Lake County	LXV	GA
Limon	Limon Municipal	LIC	GA
Longmont	Vance Brand	LMO	GA
Meeker	Meeker/Coulter Field	EEO	GA
Monte Vista	Monte Vista Municipal	MVI	GA
Nucla	Hopkins Field	AIB	GA
Pagosa Springs	Stevens Field	PSO	GA
Pueblo	Pueblo Memorial	PUB	GA
Rangely	Rangely	4V0	GA
Rifle	Rifle Garfield County	RIL	GA
Salida	Harriet Alexander Field	ANK	GA
Steamboat Springs	Steamboat Springs	SBS	GA
Sterling	Sterling Municipal	STK	GA
Telluride	Telluride Regional	TEX	GA
Trinidad	Perry Stokes	TAD	GA
Walsenburg	Spanish Peaks Airfield	4V1	GA
Wray	Wray Municipal	2V5	GA
Yuma	Yuma Municipal	2V6	GA

Source: FAA NPIAS, 2019-2023

5.2.2. FAA ASSET Study

As shown in **Table 5.2,** approximately 77 percent of all NPIAS airports in the U.S. are Nonprimary GA compared to 67 percent of Colorado's NPIAS airports. Encompassing all civilian airports that do not provide scheduled air carrier service or serve as reliever facilities, these Nonprimary GA facilities support a wide variety of aeronautical activities integral to the nation's air transportation network and to Colorado's residents and visitors. Activities such as wildland firefighting, aerial medical evacuations, and search and rescue operations cannot always be economically supported at airports with air carrier service, and is many times provided at GA airports. These services are essential in rural communities and can mean the difference between life and death. In some cases, alternative modes of delivery for certain activities, such as fighting forest fires without aerial support, are less effective and pose greater risks to human life.

In 2012, the FAA reviewed the network of GA facilities within the NPIAS to better capture their diverse functions and economic contributions. The results of this study were compiled in *General Aviation Airports: A National Asset* (referred to as ASSET 1 or the ASSET Study). This report highlights the following key aeronautical functions provided by the GA airport system:

- Emergency preparedness and response
- Critical community access for remote areas
- Commercial, industrial, and economic activity functions
- Access to tourism and special events
- Other aviation-specific functions, including corporate flights and flight instruction

The ASSET Study divided GA airports into four new roles or classifications designed to provide policymakers with a better understanding of the vast and diverse nature of the GA system. ASSET roles capture the true value of GA airports at local and regional levels and fill the gap left by the NPIAS in describing the activities and relative roles of airports in the national GA system. Roles are primarily based on existing activity levels, number and type of based aircraft, and volume and types of flights. Evaluation criteria also incorporate the aeronautical functions economically and operationally supported by the airport. As a result, the ASSET Study in part classifies airports based on their roles in serving the public interest. The ASSET Study also recognizes unclassified NPIAS airports, as they do not meet other criteria and have limited activity and number of based aircraft. It is also important to note that all Nonprimary airports—both those that are Nonprimary Commercial Service, Relievers, and Nonprimary GA—are classified in ASSET with corresponding roles. The ASSET roles are anticipated to continue to be updated in subsequent NPIAS publications using the criteria established by FAA in the ASSET Study. **Table 5.4** defines the ASSET roles.

Table 5.4. ASSET Roles

Role	Description
National	Support the national airport system by providing communities access to national and international markets in multiple states and throughout the U.S. National airports have very high levels of aviation activity with many jets and multiengine propeller aircraft.
Regional	Support regional economies by connecting communities to regional and national markets. Generally located in metropolitan areas and serve relatively large populations. Regional airports have high levels of activity with some jets and multiengine propeller aircraft. The metropolitan areas in which regional airports are located can be Metropolitan Statistical Areas with an urban core population of at least 50,000 or Micropolitan Statistical Areas with a core urban population between 10,000 and 50,000.
Local	Supplement local communities by providing access to markets within a state or immediate region. Local airports are most often located near larger population centers, but not necessarily in metropolitan or micropolitan areas. Most of the flying at local airports is by piston aircraft in support of business and personal needs. These airports typically accommodate flight training, emergency services, and charter passenger service.
Basic	Provide a means for general aviation flying and link the community to the national airport system. These airports support general aviation activities such as emergency response, air ambulance service, flight training, and personal flying. Most of the flying at Basic airports is self-piloted for business and personal reasons using propeller-driven aircraft. They often fulfill their role with a single runway or helipad, and minimal infrastructure.
Unclassified	Currently in the NPIAS but with limited activity. If the next review of an Unclassified airport's activity shows levels that meet the criteria for one of the classifications, the airport will be reclassified in the next published NPIAS.

Source: ASSET 1, 2012

Following the release of ASSET 1, the FAA requested additional information from airport sponsors regarding the aeronautical functions supported by and the types of flying occurring at their airports.[4] Based in part on this subsequent investigation, the FAA released *ASSET 2: In-Depth Review of 497 Unclassified Airports* (ASSET 2) in 2014. This report further evaluated the Unclassified airports from ASSET 1 to review if additional data were available to classify these airports. Colorado did not have any Unclassified airports in ASSET 1 (2012) nor in ASSET 2 (2014). No airports in Colorado have fallen to this status during subsequent NPIAS biennial reevaluations of ASSET classifications. **Table 5.5** presents the ASSET categories of Colorado's Nonprimary airports, including the three Nonprimary airports that have commercial service but still have been assigned an ASSET category in the *2019-2023 NPIAS*.[5]

[4] FAA. (2014) ASSET 2: In-Depth Review of 497 Unclassified Airports (ASSET 2). p. iii.
[5] Colorado's three Nonprimary Commercial Service airports include ALS, CEZ, and FNL.

Table 5.5. ASSET Roles of Colorado's NPIAS Nonprimary Airports

Associated City	Airport Name	FAA Identifier	ASSET Category
Akron	Colorado Plains Regional	AKO	Basic
Alamosa	San Luis Valley Regional	ALS	Local
Boulder	Boulder Municipal	BDU	Local
Buena Vista	Central Colorado Regional	AEJ	Basic
Burlington	Kit Carson County	ITR	Local
Canon City	Fremont County	1V6	Local
Colorado Springs	Meadow Lake	FLY	Regional
Cortez	Cortez Municipal	CEZ	Local
Craig	Craig-Moffat	CAG	Local
Delta	Blake Field	AJZ	Local
Denver	Centennial	APA	National
Denver	Rocky Mountain Metropolitan	BJC	National
Denver	Colorado Air and Space Port	CFO	Regional
Erie	Erie Municipal	EIK	Local
Fort Collins/Loveland	Northern Colorado Regional	FNL	Regional
Fort Morgan	Fort Morgan Municipal	FMM	Local
Granby	Granby-Grand County	GNB	Local
Greeley	Greeley-Weld County	GXY	Regional
Holyoke	Holyoke	HEQ	Basic
Kremmling	Mc Elroy Airfield	20V	Local
La Junta	La Junta Municipal	LHX	Basic
Lamar	Lamar Municipal	LAA	Local
Leadville	Lake County	LXV	Basic
Limon	Limon Municipal	LIC	Local
Longmont	Vance Brand	LMO	Regional
Meeker	Meeker/Coulter Field	EEO	Basic
Monte Vista	Monte Vista Municipal	MVI	Local
Nucla	Hopkins Field	AIB	Basic
Pagosa Springs	Stevens Field	PSO	Local
Pueblo	Pueblo Memorial	PUB	Regional
Rangely	Rangely	4V0	Basic
Rifle	Rifle Garfield County	RIL	Regional
Salida	Harriet Alexander Field	ANK	Local
Steamboat Springs	Steamboat Springs	SBS	Local
Sterling	Sterling Municipal	STK	Local
Telluride	Telluride Regional	TEX	Local
Trinidad	Perry Stokes	TAD	Basic
Walsenburg	Spanish Peaks Airfield	4V1	Basic
Wray	Wray Municipal	2V5	Local
Yuma	Yuma Municipal	2V6	Basic

Source: FAA NPIAS, 2019-2023

5.3. Types of State Classification Methodologies

In addition to the federal-level NPIAS utilized by the FAA to classify airports significant to the National Airspace System, many states develop tailored methodologies designed to describe airports' roles at the state, regional, and/or local levels. These roles or classifications are based on the aviation characteristics and functions most important to a state's specific needs and priorities and generally encompass both NPIAS and non-NPIAS airports. Nomenclature is often comprehendible by the aviation and non-aviation public, such as "business class, recreational, local service, general utility, or basic utility" (Advisory Circular [AC] 150-5070, Change 1, §209b).

Most state aviation system planning role classification structures employ one of just a few methodologies. These methodologies range from very complex systems that assign points based on airport services and facilities, to relatively straightforward flow chart methodologies. The following provides an overview of three common role stratification methodologies identified during the system plan review.

5.3.1. Stringent Set of Role Criteria

Applying a stringent set of role criteria to each airport role is a straightforward approach for stratifying a state's airport system. It is also the methodology utilized by the FAA ASSET Study. The approach is simple: to be in the highest airport role, an airport must meet the most demanding set of criteria, followed by continually less-stringent criteria for lower airport roles. This methodology typically uses the same type of criteria for all roles, although some system plans modify this methodology to use different criteria depending on the role level. For example, FAA ASSET uses the number of instrument flight rule (IFR) operations, number of based jet aircraft, number of international departures, annual interstate operations, annual enplanements, and air cargo landed weight as criteria for placing airports in the national airport classification. This methodology can also be adapted to allow airports to meet one of several sets of criteria to be placed within a specific role. For example, to be a Regional airport in the ASSET Study, an airport must meet one of the following criteria:

- The airport is in a metropolitan or micropolitan statistical area, has at least 10 annual domestic IFR flights over 500 miles in radius, at least 1,000 annual IFR operations, at least one based jet, or at least 100 based aircraft or
- The airport is in a metropolitan or micropolitan statistical area, and the airport meets the definition of commercial service

This methodology's adaptability is its most notable advantage. By employing different criteria based on role and/or the use of "or" statements, the stringent sets of role criteria methodology can be modified for use in small or complex airport systems while remaining relatively easy to communicate to clients and the public. Conversely, without such modifications, the methodology is often too rigid to be adequate for all but the simplest of airport systems.

5.3.2. Flow Chart

A flow chart methodology uses an "if-then" series of decisions to categorize airports based on prioritized criteria as defined by the state. For example, a system of airports may first be divided based on tiers of primary runway length, then by the type of available fuel or instrument approach capabilities, number of based aircraft, and so on as deemed important to the specific state's airport system. An airport is assigned a role based on the path it takes along the flow chart. In addition to utilizing fewer criteria than other methodologies, advantages of the flow chart methodology include:

- Achieves detailed results with just a few decision criteria
- Easy to communicate to clients and the public
- Easy to duplicate when updating system plans

However, a flow chart can be less customizable than other structures, particularly the points system methodology described in the following section.

5.3.3. Points System

A points system methodology assigns points to airports based on airport characteristics such as activities and facilities as selected by the state. While this methodology can vary widely amongst states, facilities and services supporting higher levels of activity and larger aircraft are typically assigned a higher points value. For example, an airport with a 5,500-foot long runway would gain more points for runway length than an airport with a 3,800-foot long runway. Similarly, an airport with a population of 450,000 people in its market area would earn more points for population coverage than an airport with a smaller population in its market area. Different criteria may also be weighted differently based on their relative importance in the system. For example, the point total for runway length may be 10, while the total points available for population coverage may be five.

To determine roles, each airport's points are summed, and roles are assigned based on ranges of total points (e.g., 50-36 for primary airports, 35-20 for secondary airports, etc.). The state may also decide to establish a set number of airports in each role and categorize airports based on their relative scores to fit within the pre-established percentage structure. The primary advantage of the points system is that it can be customized to be as complex and nuanced as the airport system requires. However, this methodology is often difficult to clearly communicate to clients and the public and can be challenging to update between system plan updates.

5.4. 2011 CASP Roles

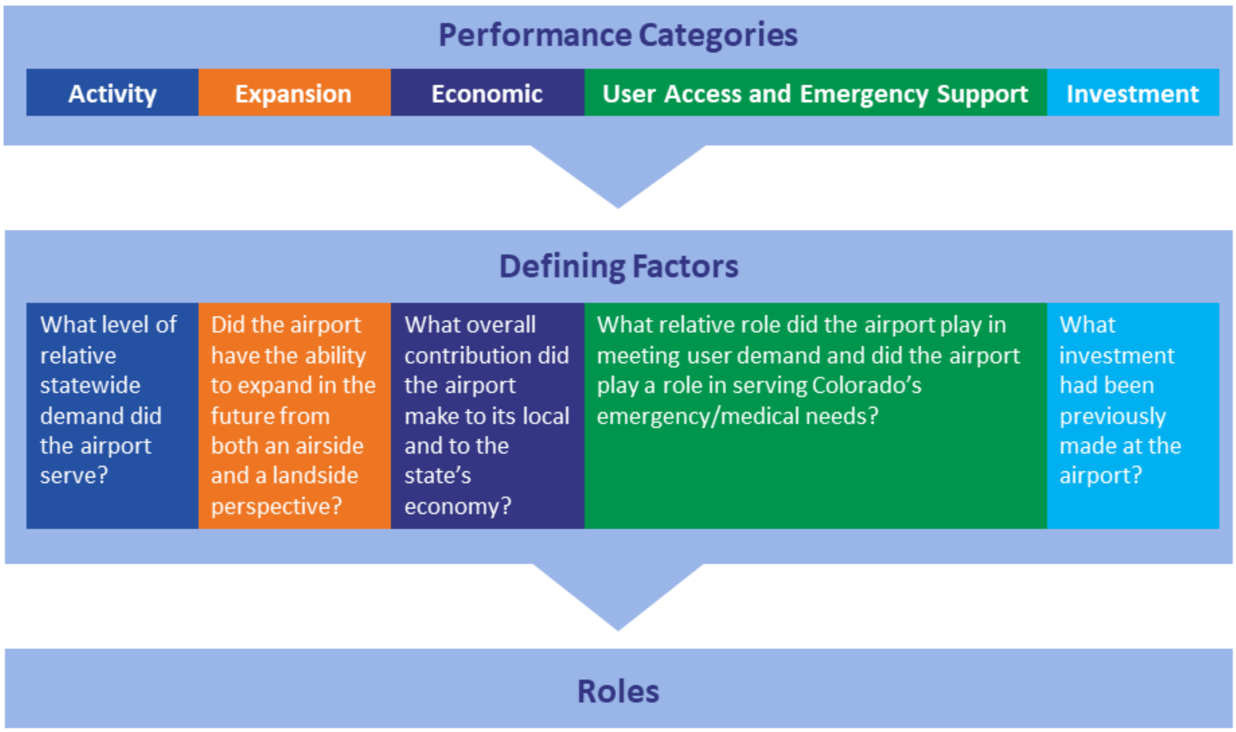
Colorado's existing airport system classification methodology was first developed during the 2000 CASP and later revised during the 2005 and 2011 updates. The existing methodology most closely aligns with the points system described above. All airports were first evaluated equally in terms of transportation needs served and abilities to provide economic support. Then, specific factors were applied to define each airport's role. This section describes the existing classification methodology and resultant roles that have generally governed the treatment of Colorado's system airports since 2000.

5.4.1. 2011 CASP Roles Evaluation

During the 2000 Colorado Inventory and Implementation Plan, an evaluation process was undertaken to develop a role assignment process for the Colorado system that recognized and considered the unique functions and services of general aviation airports (commercial service airports were also included). At that time, the FAA only had two distinctions for non-commercial service facilities: Reliever and GA airports. While CDOT Division of Aeronautics deemed the federal methodology to be fairly reflective of commercial service airports, the agency recognized that GA airports were playing different roles in Colorado.

As a result, CDOT Division of Aeronautics worked with the Colorado Aeronautical Board (CAB) to identify categories to distinguish roles for all system airports. These categories are consistent with those used by FAA to describe a balanced and viable airport system. **Figure 5.1** shows how the role evaluation process worked in terms of considering performance categories and defining factors within each category.

Figure 5.1. Role Evaluation Process



Source: CASP, 2011

The 2000 Colorado Inventory and Implementation Plan recognized that state-specific roles could be developed based on an evaluation of the many different internal and external factors that influence an airport's role in the system. The factors that were used to evaluate airports in terms of the performance categories depicted above are as follows:

- Activity
  - Total based aircraft
  - Based aircraft fleet (including based jets)
  - Total annual operations
  - Total annual itinerant operations
  - Enplanements (identifying separately those enplanements carried by operators receiving Essential Air Service [EAS] subsidies)
- Expansion: Manmade, natural, and environmental features that could limit future expansion
- Economic: Economic impact as calculated during the previous aviation economic impact study
- User Access and Emergency Support
  - Residents and pilots within a 30-minute drive of all system airports
  - Use in transporting medical personnel, doctors, patients, and veterinarians as identified by the American Hospital Association and operators of emergency aircraft

- Investment
    - Runway length
    - Runway strength or weight-bearing capacity
    - Approach type
    - Runway lighting type
    - Taxiway system
    - Fuel availability

Each airport was ranked and scored from high to low in terms of their performance against each factor. An example would be if the longest runway in the state was 12,000 feet long and the shortest runway was 3,500 feet long, the 12,000-foot-long runway would be ranked first, and the 3,500-foot-long runway would be ranked last. All other runways would be ranked in between. Once ranked, airports were sorted into similar groups for each factor. Scores from one to ten, with ten being the highest, were then assigned to airports in each group. For each role assignment factor and the sub-factors, a total score for each airport was established. The Colorado Aeronautical Board then assigned "importance weights" to each of the role assignment factors as follows:

- Activity: 5
- Coverage/emergency access: 4
- Economic: 5
- Investment: 3
- Expansion: 1

These importance weightings were multiplied with each airport's combined numerical score for each factor; multiplied scores for each factor were then totaled, and the airports were again sorted from high to low. Ultimately, this process led to a final score for all system airports, allowing airports to be grouped into three categories: low, medium, and high. Airports in the high category were designated as Major Airports, airports in the medium category were designated as Intermediate Airports, and airports in the low category were designated as Minor Airports.

In 2011, CDOT Division of Aeronautics fine-tuned the airport roles established in 2000 and updated in 2005 using three factors that indicate the performance of all airports: annual economic impact, state grant history, and fuel tax reimbursements.

Table 5.6 provides the outcome of the 2011 CASP airport role evaluation process. **Figure 5.2** is a map of airport roles as presented in the 2011 plan. Note that Animas Airpark (00C), Calhan (5V4), Crawford (99V), Dove Creek (8V6), Easton (Valley View) (11V), Platte Valley Airpark (18V), and Westwinds (D17) were included in the 2011 evaluation but were removed for the 2020 CASP due to privately-owned airports' ineligibility for CDOT Division of Aeronautics funding. Three other privately owned public-use airports at the time of the 2000 CASP were Mack Mesa, Gebauer, and Colorado Springs East who have since changed to private-use and the reason they are not included in further analysis within this chapter. It is important to recognize that the FAA's ASSET classifications were established in 2012 after the prior CASPs were completed.

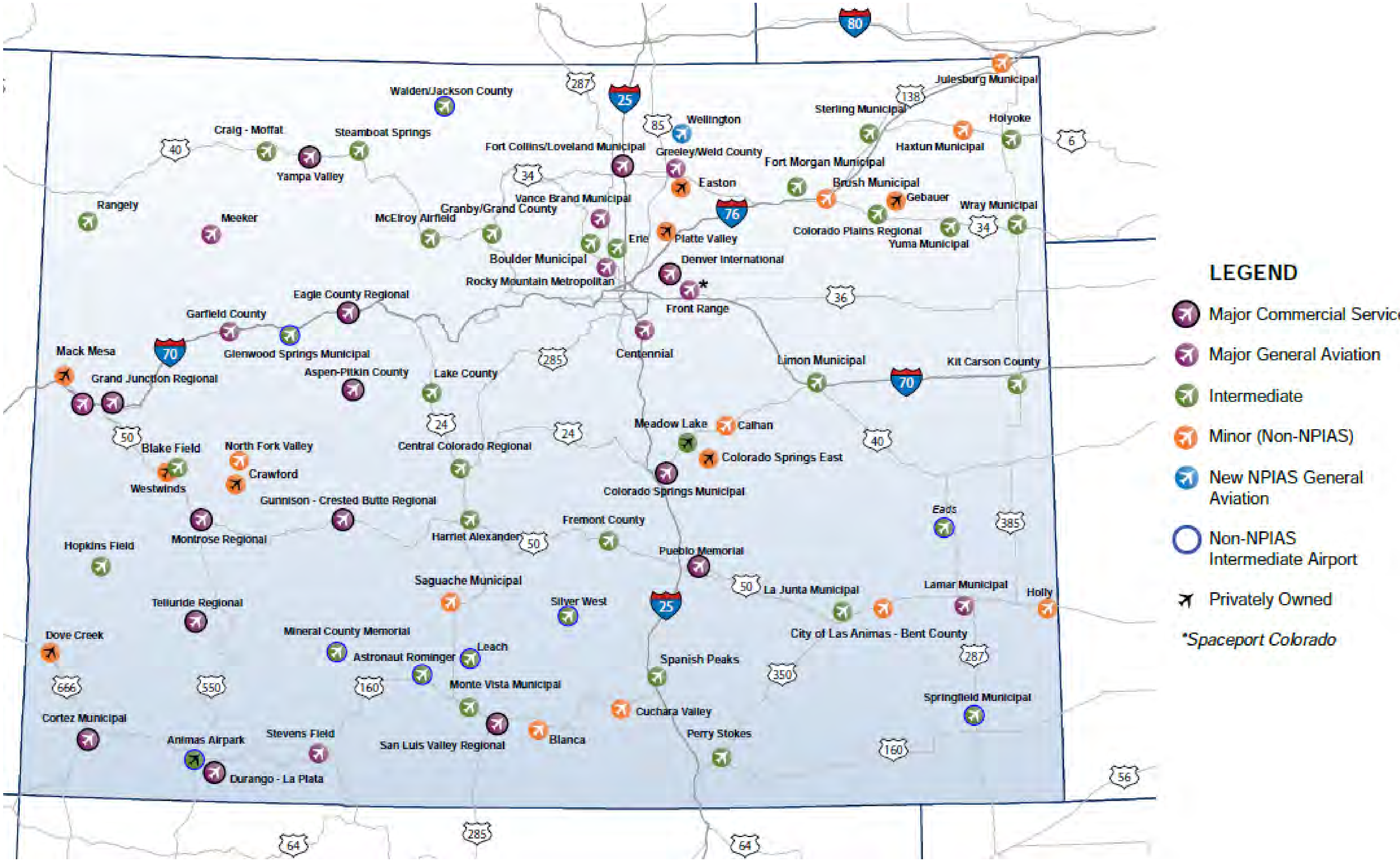
Table 5.6. 2011 CASP Airport Roles

Associated City	Airport	FAA Identifier	2011 Airport Role
Akron	Colorado Plains Regional	AKO	Intermediate
Akron	Gebauer	5V4	Minor
Alamosa	San Luis Valley Regional	ALS	Major
Aspen	Aspen-Pitkin County	ASE	Major
Blanca	Blanca	05V	Minor
Boulder	Boulder Municipal	BDU	Intermediate
Brush	Brush Municipal	7V5	Minor
Buena Vista	Central Colorado Regional	AEJ	Intermediate
Burlington	Kit Carson County	ITR	Intermediate
Calhan	Calhan	5V4	Minor
Canon City	Fremont County	1V6	Intermediate
Center	Leach Field	1V8	Intermediate
Colorado Springs	Colorado Springs Municipal	COS	Major
Colorado Springs	Meadow Lake	FLY	Intermediate
Cortez	Cortez Municipal	CEZ	Major
Craig	Craig-Moffat	CAG	Intermediate
Crawford	Crawford	99V	Minor
Creede	Mineral County Memorial	C24	Intermediate
Del Norte	Astronaut Kent Rominger	RCV	Intermediate
Delta	Blake Field	AJZ	Intermediate
Delta	Westwinds	D17	Minor
Denver	Centennial	APA	Major
Denver	Denver International	DEN	Major
Denver	Colorado Air and Space Port	CFO	Major
Denver	Rocky Mountain Metropolitan	BJC	Major
Dove Creek	Dove Creek	8V6	Minor
Durango	Durango-La Plata County	DRO	Major
Durango	Animas Airpark	00C	Intermediate
Eads	Eads Municipal	9V7	Intermediate
Eagle	Eagle County Regional	EGE	Major
Ellicott	Colorado Springs East	CO49	Minor
Erie	Erie Municipal	EIK	Intermediate
Fort Collins/Loveland	Northern Colorado Regional	FNL	Major
Fort Morgan	Fort Morgan Municipal	FMM	Intermediate
Glenwood Springs	Glenwood Springs Municipal	GWS	Intermediate
Granby	Granby-Grand County	GNB	Intermediate
Grand Junction	Grand Junction Regional	GJT	Major
Greeley	Greeley-Weld County	GXY	Major
Greeley	Easton (Valley View)	11V	Minor
Gunnison	Gunnison-Crested Butte Regional	GUC	Major
Haxtun	Haxtun Municipal	17V	Minor
Hayden	Yampa Valley	HDN	Major
Holly	Holly	K08	Minor
Holyoke	Holyoke	HEQ	Intermediate
Hudson	Platte Valley Airpark	18V	Minor
Julesburg	Julesburg Municipal	7V8	Minor
Kremmling	Mc Elroy Airfield	20V	Intermediate
La Junta	La Junta Municipal	LHX	Intermediate

Associated City	Airport	FAA Identifier	2011 Airport Role
La Veta	Cuchara Valley	07V	Minor
Lamar	Lamar Municipal	LAA	Major
Las Animas	Las Animas-Bent County	7V9	Minor
Leadville	Lake County	LXV	Intermediate
Limon	Limon Municipal	LIC	Intermediate
Longmont	Vance Brand	LMO	Major
Mack	Mack Mesa	10CO	Minor
Meeker	Meeker/Coulter Field	EEO	Major
Monte Vista	Monte Vista Municipal	MVI	Intermediate
Montrose	Montrose Regional	MTJ	Major
Nucla	Hopkins Field	AIB	Intermediate
Pagosa Springs	Stevens Field	PSO	Major
Paonia	North Fork Valley	7V2	Minor
Pueblo	Pueblo Memorial	PUB	Major
Rangely	Rangely	4V0	Intermediate
Rifle	Rifle Garfield County	RIL	Major
Saguache	Saguache Municipal	04V	Minor
Salida	Harriet Alexander Field	ANK	Intermediate
Springfield	Springfield Municipal	8V7	Intermediate
Steamboat Springs	Steamboat Springs	SBS	Intermediate
Sterling	Sterling Municipal	STK	Intermediate
Telluride	Telluride Regional	TEX	Major
Trinidad	Perry Stokes	TAD	Intermediate
Walden	Walden-Jackson County	33V	Intermediate
Walsenburg	Spanish Peaks Airfield	4V1	Intermediate
Westcliffe	Silver West	C08	Intermediate
Wray	Wray Municipal	2V5	Intermediate
Yuma	Yuma Municipal	2V6	Intermediate

Source: CASP, 2011

Figure 5.2. 2011 CASP Airport Roles



Source: CASP, 2011

5.5. 2020 CASP Classifications

As discussed above, state roles are developed to reflect the existing and future needs of the state whereas ASSET classifications reflect the roles of airports at the national level. The previous CASP methodology employed multiple factors in five performance categories (i.e., activity, expansion, economic, user access and emergency support, and investment) to score and rank airports. The results of this assessment were used to classify airports in terms of their abilities to serve the state's transportation and economic needs prior to any FAA categorization for GA airports such as ASSET.

The 2020 CASP re-evaluated the prior methodology to determine its continued ability to accurately describe the functions of Colorado's airports while meeting the needs of CDOT Division of Aeronautics and providing some comparison with the FAA's ASSET classifications. Based on discussions with CDOT Division of Aeronautics and the Project Advisory Committee (PAC), as well as the overall needs of Colorado's airports, it was determined that the 2020 CASP would establish a new classification methodology that more closely aligns with the NPIAS and the FAA's ASSET system. At the same time, CDOT Division of Aeronautics emphasized the importance of tailoring the methodology to the specific needs of Colorado's system airports and recognizing the contributions of all airports to the overall system.

To create a revised methodology in alignment with the federal system and reflective of Colorado's specific needs, goals, and existing policies, the 2020 CASP first separated airports with existing or committed scheduled commercial service including 14 CFR Part 121 air carrier service and scheduled Part 135 or Part 380 commercial service. Airports that provide any level of scheduled commercial service were assigned the role of Commercial Service in the state system, regardless of whether they are classified as such in the NPIAS.[6,7] Once this distinction had been made, GA airports were then evaluated to determine the classifications at the state level.

The GA classification process began by reviewing the nomenclature of the FAA's GA ASSET system. Composed of four classifications specific to GA airports (National, Regional, Local, and Basic, see **Table 5.4**), the ASSET classifications are generally designed to characterize the geographic markets served and the type and volume of aviation activities that typically occur at the GA airports. CDOT Division of Aeronautics determined that this nomenclature was appropriate for state roles except in the case of Basic airports. Basic airports serve local communities, often support quality-of-life activities such as emergency services and medical transport, offer access to less populated regions, and can provide economic benefits to surrounding areas. To better describe the function of such airports in Colorado, the 2020 CASP revised this terminology to "Community." Community airports also better align with the geographic/market-associated nomenclatures of the three other ASSET classifications. During these discussions, it also became apparent that Colorado's non-NPIAS airports that did not meet the Community role criteria should be placed in an additional category. Again, reflective of geographic

[6] At the federal level, the role of Commercial Service is only assigned to Primary Commercial Service facilities. Nonprimary Commercial Service Airports are classified in ASSET with an associated GA classification, but also have a "category" of commercial service. Additional details about Primary versus Nonprimary airports are provided in Section 5.2.1. Section 5.2.2 describes the ASSET system.

[7] Northern Colorado Regional (FNL) is classified as Commercial Service because commercial service is expected to return once the remote tower is approved by the FAA. For additional detail, see Chapter 4. Aviation System Issues, Section 4.2.

areas, a final category of "Rural" airports was added to the 2020 CASP classifications scheme. "GA" was also added before each of the state roles to signify that these are state classifications. This clarifies that all airport classifications except Commercial Service are GA facilities in Colorado.

Once the terminology was finalized, the 2020 CASP reviewed how all system airports fall into these classifications at the state level. NPIAS and Non-NPIAS airports were evaluated similarly as described in the following sections.

5.5.1. Classifications of NPIAS Airports

The federal classifications documented in Section 5.2 served as the basis for the classification of Colorado's 49 NPIAS airports at the state level. However, several important revisions were added to tailor the methodology to the unique needs of the state. As described above, NPIAS airports are deemed critical to the National Airspace System. To be eligible for inclusion, an airport must provide scheduled commercial service with a minimum of 2,500 or more annual revenue enplaning passengers (existing or projected within the plan period of the NPIAS report) or be a GA airport meeting the following criteria:[8]

- Included in an FAA-accepted state aviation system plan or metropolitan aviation system plan
- Serves a community more than 30-minutes or more average ground travel time from the nearest existing or proposed NPIAS airport
- Supports at least 10 based aircraft or is projected to do so during the short-range (five-year) planning period
- Has an eligible sponsor willing to take responsibility for airport ownership and development

An airport's inclusion in the NPIAS generally means that it continues to meet these eligibility requirements. As such, the 2020 CASP assumes that Colorado's 49 NPIAS airports currently meet these criteria and will continue to do so through the planning horizon. Once this foundational assumption was established, state classifications for NPIAS airports were examined.

The NPIAS/ASSET system uses a flow-chart methodology designed to appropriately classify airports nationally with peer facilities based on their functions within geographic markets. Airports are assessed in terms of their performance using key indicators of aviation type and volume, such as instrument operations, based aircraft/jet, and support of air cargo. The factors used in this evaluation are described in the *2019-2023 NPIAS Report*, with additional details provided in *Appendix C: Statutory and Policy Airport Categories Use in the NPIAS Report*.[9] Additionally, factors used to classify GA airports are described in ASSET 1, *Appendix A-1: Criteria Used to Categorize General Aviation Airports*.[10]

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[8] FAA. (2000). *Order 5090.3C: Field Formulation of the NPIAS*. Available online at https://www.faa.gov/documentLibrary/media/Order/planning_5090_3c.pdf (accessed July 2019).

[9] FAA (2019). *Appendix C: Statutory and Policy Airport Categories Used in the NPIAS.* Available at www.faa.gov/airports/planning_capacity/npias/reports/media/NPIAS-Report-2019-2023-Appendix-C.pdf (accessed April 2019).

[10] FAA (2010). *Appendix A-1: Criteria Used to Categorize General Aviation Airport.* Available online at www.faa.gov/airports/planning_capacity/ga_study/media/2012AssetReportAppA.pdf (accessed April 2019).

While deemed generally appropriate for the Colorado aviation system, three key changes were incorporated into this federal framework for use in the state classification system. First, all airports with existing or committed scheduled commercial services were classified as Commercial Service at the state level regardless of their classification in the NPIAS/ASSET system (as described above). Next, the 2020 CASP reassessed GA airports' federal classifications using 2018 data for instrument operations, based aircraft, and enplanements. The *2019-2023 NPIAS* classified airports using 2016 and 2017 data.[11] This reassessment was deemed necessary due to the rapid year-over-year demand changes witnessed in Colorado and the availability of updated information. The use of 2018 data also aligns with the baseline data year used in other CASP analyses.

Finally, on-site weather reporting was added as an evaluation criterion for GA-Local airports. This is because instrument operations as reported in the FAA's Traffic Flow Management System Counts (TFMSC) were deemed insufficient to describe the role of these airports in the system and all but one non-NPIAS airport met the minimum TFMSC operations for classification. The TFMSC records filed flight plans, which could be conducted under visual flight rules. On-site weather reporting provides a supplemental criterion that, when used in combination with instrument operations, more accurately indicates GA-Local airports' functions at the state level.

The factors used to evaluate Colorado's NPIAS airports are summarized in **Table 5.7**. The table also highlights the factors tailored specifically for Colorado, including when data was updated from 2016 to 2018. The factors appear according to the order in which they are used to classify airports at the federal and state levels.

[11] As determined based on discussion with FAA officials.

Table 5.7. FAA/State Airport Classification Factors and Relevancy

Factor	Relevancy	Updated for 2020 CASP? / Data Source (year)*
Commercial service	The availability of scheduled commercial service indicates a higher level of demand and business activity. Commercial service airports are federally mandated to be included in the NPIAS. Only Primary Commercial Service airports are classified as Commercial Service in the NPIAS, while airports providing any scheduled air carrier service (or where there is a commitment for air carrier service to return in the near term) are classified as such at the state level.	Yes / CDOT Division of Aeronautics
Enplanements	The number of revenue passengers boarding an aircraft is an important indicator of an airport's role in the economy. Paying passengers on a commercial airline choose an airport based on its location and services offered.	Yes / FAA's Terminal Area Forecast (TAF) (2018)
Based aircraft	The number of operational and airworthy aircraft stored at a facility is a measure of the size of the airport and the activity it supports in a community or region.	Yes / National Based Aircraft Inventory Program (2018), Airport Inventory & Data Form (2018)
Based jets	Jets are generally used in conjunction with corporate/business aviation and other activities that indicate economic activity. Jets require specific infrastructure and services and are generally flown long distances. Based jet aircraft are thus an important indicator of an airport's role and economic contribution to an area.	Yes / National Based Aircraft Inventory Program (2018), Airport Inventory & Data Form (2018)
Domestic flights over 500 miles	Interstate flights over 500 nautical miles indicate the geographic area and market served by a GA airport.	No / *NPIAS 2019-2023*
IFR operations	The number and type of aircraft operations is a key indicator of an airport's role. Flights operating under IFR must file an IFR flight plan, including information about the type of aircraft. Additionally, IFR activity requires instrument approach capability, which is critical for access during instrument meteorological conditions (IMC). Thus, the number of IFR operations provides an estimate of activity, indicates the sophistication of aircraft flying there, and the presence of certain advanced instrumentation.	Yes / TFMSC (2018)
International flights	Flights to international destinations indicates the markets and geographic areas served by an airport. International arrivals and departures are also indicative of the type of aircraft used as an airport, particularly in Colorado, as the state does not adjoin an international border.	No / *NPIAS 2019-2023*

Factor	Relevancy	Updated for 2020 CASP? / Data Source (year)*
Interstate flights	The number of flights to interstate destinations indicates market and geographic areas served.	No / *NPIAS 2019-2023*
Landed cargo weight	Air cargo is an important component of contemporary logistics chains, especially with the rapid increase in e-commerce. Air cargo indicates an airport's importance in the local economy and may indicate the presence of certain facilities necessary to handle shipments. It is important to note that few GA airports have landed cargo weights of significance.	No / *NPIAS 2019-2023*
Located over 30 miles from the nearest NPIAS airport	When airports are located over 30 miles from another airport, it becomes more likely that it will be used to access a remote community and provide emergency services and response.	No / *NPIAS 2019-2023*
On-site weather reporting	The presence of an Automated Weather Observing System (AWOS), Automated Surface Observing System (ASOS) or Automated Unicom provides real-time weather data to pilots. This increases safety and indicates the sophistication of an airport's instrumentation. The presence of on-site weather reporting can be a critical factor for emergency services personnel including medical flight operators when determining which airports to operate at.	Yes / National Flight Data Center (2018)
Opened within the last 10 years	A recently opened airport may not have been able to reach projected activity levels due to unforeseen events such as increased fuel prices or other economic contexts beyond an airport's control.	No / *NPIAS 2019-2023*
Owned/Serving a Native American community	An airport that serves a Native American community generally provides access, mobility, and economic opportunity to historically disadvantaged and underserved areas.	No / *NPIAS 2019-2023*
Public interest supported by government agencies	Airports may support the public interest by providing communities with access to critical functions provided by government agencies including firefighting, law enforcement, freight and mail service, and scheduled air service.	No / *NPIAS 2019-2023*
Publicly owned	A publicly owned, public use airport has access to federal and/or state dollars and should be managed in a way that supports the public interest.	No / *NPIAS 2019-2023*

Factor	Relevancy	Updated for 2020 CASP? / Data Source (year)*
Reliever airport	FAA-designated Reliever airports are airports designated by the FAA to relieve congestion at commercial service airports and to provide improved general aviation access to the overall community. They provide capacity gains at commercial service airports by attracting GA aircraft with lower capacities and slower speeds from commercial service airports. They also spread out aircraft over a wider area generally improving air traffic in the community.	No / *NPIAS 2019-2023*
Special aeronautical use	Airports can support many types of special aeronautical uses such as space flight that may not otherwise be captured in the federal functional analysis.	No / *NPIAS 2019-2023*

**Note: Eleven Colorado airports have different classifications at the state and federal levels due to the use of updated data and different use of the Commercial Service classification. These changes are highlighted in Table 5.11.*

Sources: Kimley-Horn, 2019; FAA, 2010

5.5.2. Classifications of Non-NPIAS Airports

Like NPIAS airports, the classification of Colorado's non-NPIAS airports first considered use of the federal methodology as its general framework. However, CDOT Division of Aeronautics and the project team determined that none of the 17 non-NPIAS airports could meet the criteria for the three highest classifications (i.e., Commercial Service, GA-National, GA-Regional). Accordingly, the function of non-NPIAS airports at the state level could effectively be classified using the following indicators:

- Number of instrument operations
- Availability of on-site weather reporting
- Number of based aircraft
- Number of annual enplanements

All airports that did not meet the thresholds for GA-Local and GA-Community were classified as GA-Rural facilities. The relevancy of the factors and data sources remain the same as described for NPIAS airports in **Table 5.7** above.

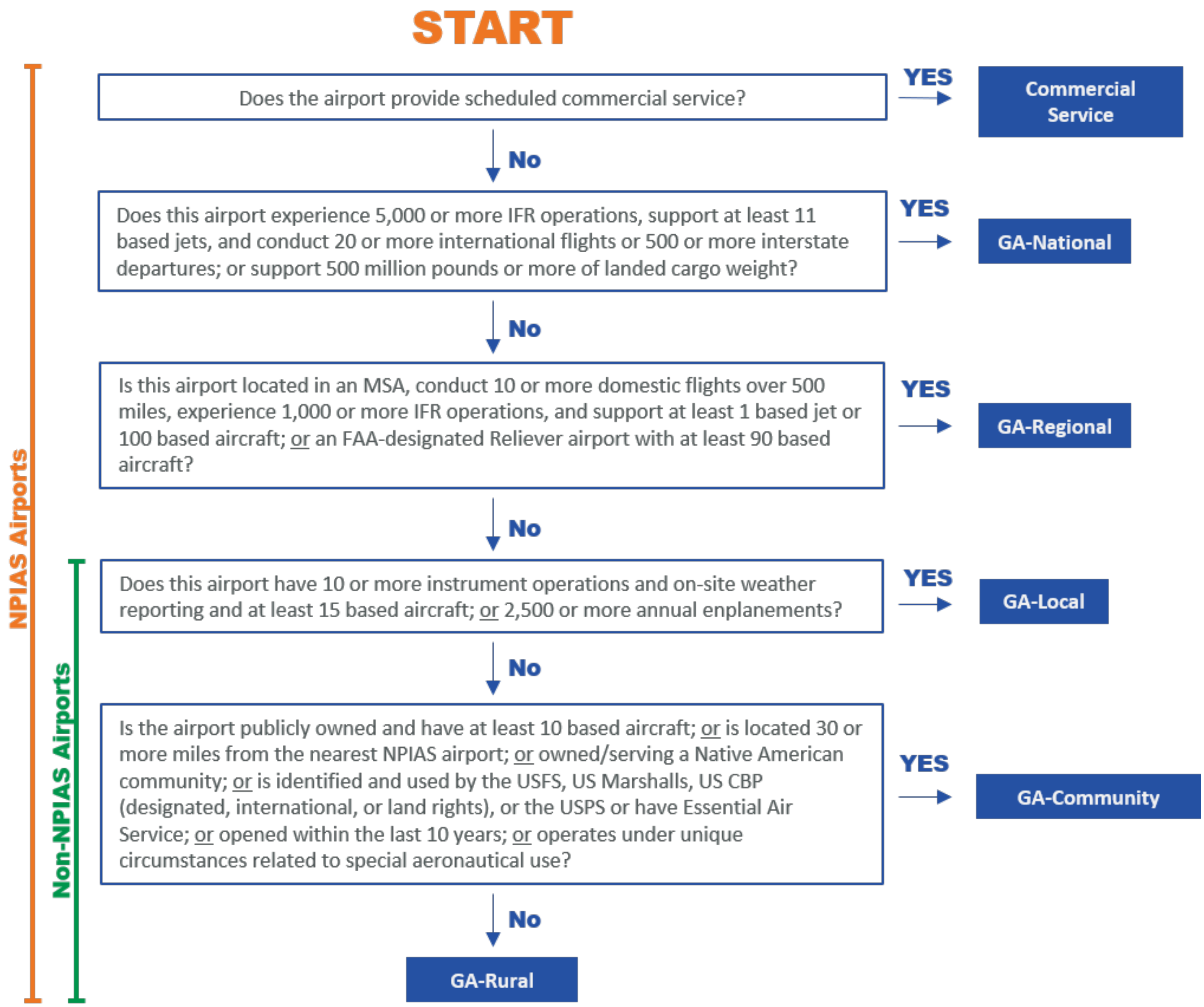
5.5.3. 2020 CASP Methodology

In summary, the 2020 CASP developed a classification flow chart in close alignment with the federal methodology to provide a systematic process for the classification of Colorado's airports. NPIAS airport classifications were reevaluated using 2018 data for instrument operations, based aircraft/jets, and enplanements as well as new information for on-site weather reporting. Additionally, all airports with existing or committed scheduled commercial service were assigned the classification of Commercial Service.[12] Non-NPIAS airports underwent a simplified approach designed to effectively characterize their functions at state and local levels using four key factors while equally evaluating them compared to similar NPIAS airports. This methodology applies a logical approach to categorize airports based on quantitative data that can be independently validated to evaluate the type and volume of activity occurring at each facility.

Figure 5.3 depicts the classification flow chart that integrates the federal methodology with the Colorado-specific revisions developed during the 2020 CASP. CDOT Division of Aeronautics can utilize the system should the agency decide to reevaluate the classifications of Colorado's system airports prior to the next CASP update.

[12] As noted above, Allegiant Airlines has committed to returning to Northern Colorado Regional Airport (FNL) once the remote tower is approved by the FAA.

Figure 5.3. 2020 CASP Flow Chart Methodology



Source: Kimley-Horn, 2019

5.5.4. Airport Role Definitions

This flow chart methodology was applied to the 65 publicly owned, public-use airports and one privately owned, public-use airport that compose the 2020 Colorado airport system using the process described in Section 5.5.1 for NPIAS airports and 5.5.2 for non-NPIAS airports. **Table 5.8** summarizes the results of this analysis by classification and compares the results to the 2011 CASP roles. As previously mentioned, Animas Airpark (00C), Calhan (5V4), Colorado Springs East (CO49), Crawford (99V), Dove Creek (8V6), Easton (Valley View) (11V), Gebauer (5V6), Mack Mesa (10CO), Platte Valley Airpark (18V), and Westwinds (D17) were included in the 2011 evaluation but were removed for the 2020 CASP due to privately-used airports' ineligibility for CDOT Division of Aeronautics funding. Note that the methodologies and associated categories are significantly different. Therefore, a direct comparison between historic and current classifications is not appropriate.

Table 5.8. 2011 / 2020 CASP Classifications Summary Results

2011 CASP Airports			2020 CASP Airports		
Role	Number	Percent (%)*	Classification	Number	Percent (%)*
Major	23	32%	Commercial Service	14	21%
Intermediate	35	48%	GA-National	2	3%
Minor	15	21%	GA-Regional	5	8%
Total	**73**	**100%**	GA-Local	19	29%
			GA-Community	16	24%
			GA-Rural	10	15%
			Total	**66**	**100%**

Sources: CASP, 2011; Kimley-Horn, 2019

Table 5.9 lists Colorado's airports by associated city, provides their status in the NPIAS, and identifies each airport's classification developed as part of the 2020 CASP. **Table 5.10** presents similar information with the airports grouped by classification. **Figure 5.4** provides a map of the 2020 Colorado system airports by classification. These results represent the airport classifications that will be used as a baseline for further analyses of the Colorado airport system in subsequent chapters.

Table 5.9. 2020 CASP Classification Summary

Associated City	Airport	FAA ID	NPIAS Status	2020 CASP Classification
Akron	Colorado Plains Regional	AKO	NPIAS	GA-Community
Alamosa	San Luis Valley Regional	ALS	NPIAS	Commercial Service
Aspen	Aspen-Pitkin County	ASE	NPIAS	Commercial Service
Blanca	Blanca	05V	Non-NPIAS	GA-Rural
Boulder	Boulder Municipal	BDU	NPIAS	GA-Local
Brush	Brush Municipal	7V5	Non-NPIAS	GA-Rural
Buena Vista	Central Colorado Regional	AEJ	NPIAS	GA-Local
Burlington	Kit Carson County	ITR	NPIAS	GA-Local
Canon City	Fremont County	1V6	NPIAS	GA-Local
Center	Leach	1V8	Non-NPIAS	GA-Rural

Associated City	Airport	FAA ID	NPIAS Status	2020 CASP Classification
Colorado Springs	Colorado Springs Municipal	COS	NPIAS	Commercial Service
Colorado Springs	Meadow Lake	FLY	NPIAS	GA-Regional
Cortez	Cortez Municipal	CEZ	NPIAS	Commercial Service
Craig	Craig-Moffat	CAG	NPIAS	GA-Local
Creede	Mineral County Memorial	C24	Non-NPIAS	GA-Community
Del Norte	Astronaut Kent Rominger	RCV	Non-NPIAS	GA-Local
Delta	Blake Field	AJZ	NPIAS	GA-Local
Denver	Centennial	APA	NPIAS	GA-National
Denver	Rocky Mountain Metropolitan	BJC	NPIAS	GA-National
Denver	Denver International	DEN	NPIAS	Commercial Service
Denver	Colorado Air and Space Port	CFO	NPIAS	GA-Regional
Durango	Durango-La Plata County	DRO	NPIAS	Commercial Service
Eads	Eads Municipal	9V7	Non-NPIAS	GA-Rural
Eagle	Eagle County Regional	EGE	NPIAS	Commercial Service
Erie	Erie Municipal	EIK	NPIAS	GA-Local
Fort Collins/ Loveland	Northern Colorado Regional*	FNL	NPIAS	Commercial Service
Fort Morgan	Fort Morgan Municipal	FMM	NPIAS	GA-Local
Glenwood Springs	Glenwood Springs Municipal	GWS	Non-NPIAS	GA-Local
Granby	Granby-Grand County	GNB	NPIAS	GA-Community
Grand Junction	Grand Junction Regional	GJT	NPIAS	Commercial Service
Greeley	Greeley-Weld County	GXY	NPIAS	GA-Regional
Gunnison	Gunnison-Crested Butte Regional	GUC	NPIAS	Commercial Service
Haxtun	Haxtun Municipal	17V	Non-NPIAS	GA-Rural
Hayden	Yampa Valley	HDN	NPIAS	Commercial Service
Holly	Holly	K08	Non-NPIAS	GA-Rural
Holyoke	Holyoke Municipal	HEQ	NPIAS	GA-Community
Julesburg	Julesburg Municipal	7V8	Non-NPIAS	GA-Rural
Kremmling	Mc Elroy Airfield	20V	NPIAS	GA-Local
La Junta	La Junta Municipal	LHX	NPIAS	GA-Local
La Veta	Cuchara Valley	07V	Non-NPIAS	GA-Rural
Lamar	Lamar Municipal	LAA	NPIAS	GA-Local
Las Animas	Las Animas-Bent County	7V9	Non-NPIAS	GA-Community
Leadville	Lake County	LXV	NPIAS	GA-Community
Limon	Limon Municipal	LIC	NPIAS	GA-Local
Longmont	Vance Brand	LMO	NPIAS	GA-Regional
Meeker	Meeker/Coulter Field	EEO	NPIAS	GA-Community
Monte Vista	Monte Vista Municipal	MVI	NPIAS	GA-Community

Associated City	Airport	FAA ID	NPIAS Status	2020 CASP Classification
Montrose	Montrose Regional	MTJ	NPIAS	Commercial Service
Nucla	Hopkins Field	AIB	NPIAS	GA-Community
Pagosa Springs	Stevens Field	PSO	NPIAS	GA-Local
Paonia	North Fork Valley	7V2	Non-NPIAS	GA-Community
Pueblo	Pueblo Memorial	PUB	NPIAS	Commercial Service
Rangely	Rangely	4V0	NPIAS	GA-Community
Rifle	Rifle Garfield County	RIL	NPIAS	GA-Regional
Saguache	Saguache Municipal	04V	Non-NPIAS	GA-Rural
Salida	Harriet Alexander Field	ANK	NPIAS	GA-Local
Springfield	Springfield Municipal	8V7	Non-NPIAS	GA-Community
Steamboat Springs	Steamboat Springs/ Bob Adams Field	SBS	NPIAS	GA-Local
Sterling	Sterling Municipal	STK	NPIAS	GA-Local
Telluride	Telluride Regional	TEX	NPIAS	Commercial Service
Trinidad	Perry Stokes	TAD	NPIAS	GA-Community
Walden	Walden-Jackson County	33V	Non-NPIAS	GA-Rural
Walsenburg	Spanish Peaks Airfield	4V1	NPIAS	GA-Local
Westcliffe	Silver West	C08	Non-NPIAS	GA-Community
Wray	Wray Municipal	2V5	NPIAS	GA-Community
Yuma	Yuma Municipal	2V6	NPIAS	GA-Community

**Note: Northern Colorado Regional (FNL) does not currently provide scheduled commercial service. However, commercial service is expected to return to the facility once the remote tower has been approved by the FAA.*

Source: Kimley-Horn, 2019

Table 5.10. 2020 CASP Airports by Classification

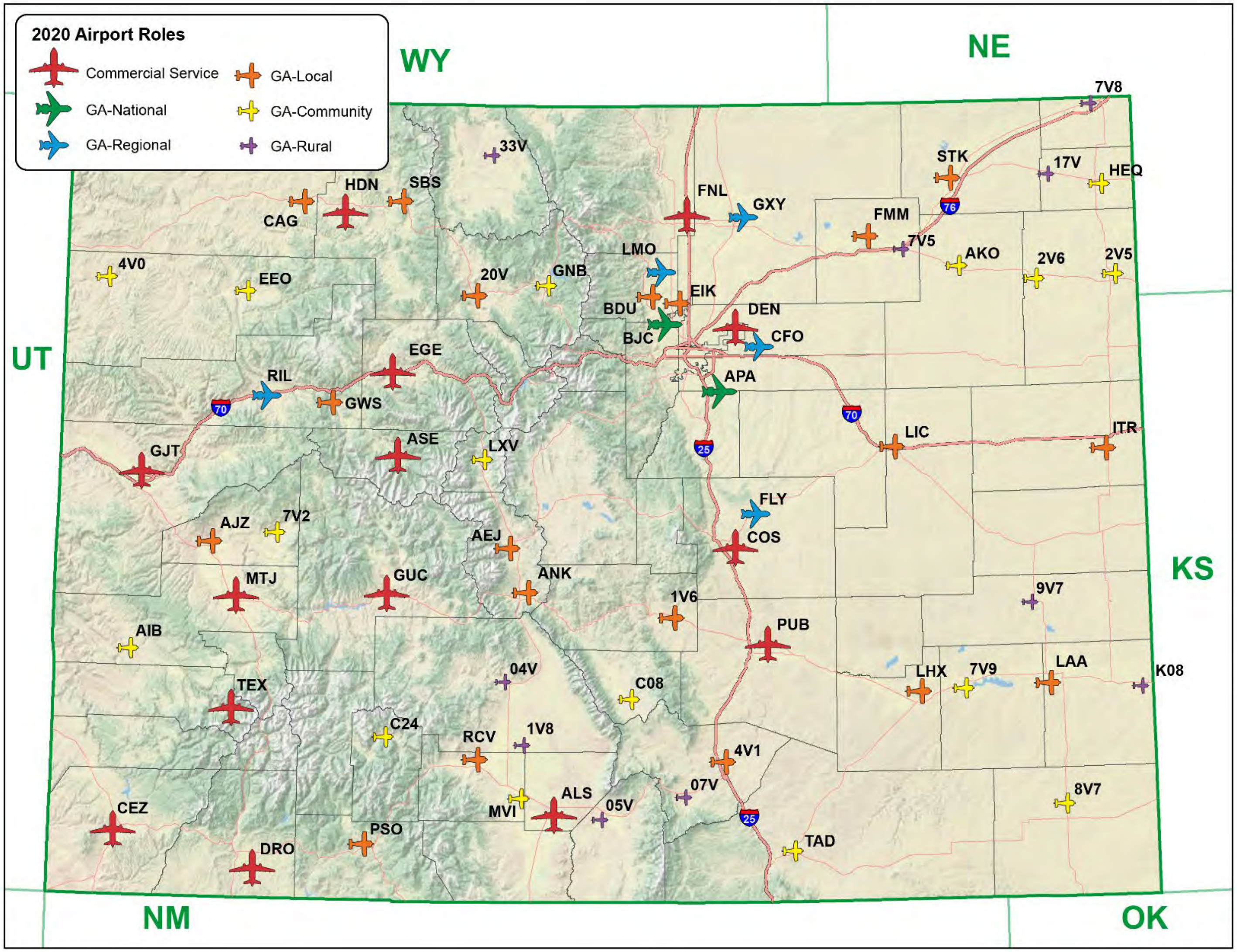
Associated City	Airport	FAA ID	NPIAS Status
Commercial Service			
Alamosa	San Luis Valley Regional	ALS	NPIAS
Aspen	Aspen-Pitkin County	ASE	NPIAS
Colorado Springs	Colorado Springs Municipal	COS	NPIAS
Cortez	Cortez Municipal	CEZ	NPIAS
Denver	Denver International	DEN	NPIAS
Durango	Durango-La Plata County	DRO	NPIAS
Eagle	Eagle County Regional	EGE	NPIAS
Fort Collins/Loveland	Northern Colorado Regional*	FNL	NPIAS
Grand Junction	Grand Junction Regional	GJT	NPIAS
Gunnison	Gunnison-Crested Butte Regional	GUC	NPIAS
Hayden	Yampa Valley	HDN	NPIAS
Montrose	Montrose Regional	MTJ	NPIAS
Pueblo	Pueblo Memorial	PUB	NPIAS
Telluride	Telluride Regional	TEX	NPIAS
GA-National			
Denver	Centennial	APA	NPIAS
Denver	Rocky Mountain Metropolitan	BJC	NPIAS
GA-Regional			
Colorado Springs	Meadow Lake	FLY	NPIAS
Denver	Colorado Air and Space Port	CFO	NPIAS
Greeley	Greeley-Weld County	GXY	NPIAS
Longmont	Vance Brand	LMO	NPIAS
Rifle	Rifle Garfield County	RIL	NPIAS
GA-Local			
Boulder	Boulder Municipal	BDU	NPIAS
Buena Vista	Central Colorado Regional	AEJ	NPIAS
Burlington	Kit Carson County	ITR	NPIAS
Canon City	Fremont County	1V6	NPIAS
Craig	Craig-Moffat	CAG	NPIAS
Del Norte	Astronaut Kent Rominger	RCV	Non-NPIAS
Delta	Blake Field	AJZ	NPIAS
Erie	Erie Municipal	EIK	NPIAS
Fort Morgan	Fort Morgan Municipal	FMM	NPIAS
Glenwood Springs	Glenwood Springs Municipal	GWS	Non-NPIAS
Kremmling	Mc Elroy Airfield	20V	NPIAS
La Junta	La Junta Municipal	LHX	NPIAS
Lamar	Lamar Municipal	LAA	NPIAS
Limon	Limon Municipal	LIC	NPIAS

Associated City	Airport	FAA ID	NPIAS Status
Pagosa Springs	Stevens Field	PSO	NPIAS
Salida	Harriet Alexander Field	ANK	NPIAS
Steamboat Springs	Steamboat Springs	SBS	NPIAS
Sterling	Sterling Municipal	STK	NPIAS
Walsenburg	Spanish Peaks Airfield	4V1	NPIAS
GA-Community			
Akron	Colorado Plains Regional	AKO	NPIAS
Creede	Mineral County Memorial	C24	Non-NPIAS
Granby	Granby-Grand County	GNB	NPIAS
Holyoke	Holyoke	HEQ	NPIAS
Las Animas	Las Animas-Bent County	7V9	Non-NPIAS
Leadville	Lake County	LXV	NPIAS
Meeker	Meeker/Coulter Field	EEO	NPIAS
Monte Vista	Monte Vista Municipal	MVI	NPIAS
Nucla	Hopkins Field	AIB	NPIAS
Paonia	North Fork Valley	7V2	Non-NPIAS
Rangely	Rangely	4V0	NPIAS
Springfield	Springfield Municipal	8V7	Non-NPIAS
Trinidad	Perry Stokes	TAD	NPIAS
Westcliffe	Silver West	C08	Non-NPIAS
Wray	Wray Municipal	2V5	NPIAS
Yuma	Yuma Municipal	2V6	NPIAS
GA-Rural			
Blanca	Blanca	05V	Non-NPIAS
Brush	Brush Municipal	7V5	Non-NPIAS
Center	Leach	1V8	Non-NPIAS
Eads	Eads Municipal	9V7	Non-NPIAS
Haxtun	Haxtun Municipal	17V	Non-NPIAS
Holly	Holly	K08	Non-NPIAS
Julesburg	Julesburg Municipal	7V8	Non-NPIAS
La Veta	Cuchara Valley	07V	Non-NPIAS
Saguache	Saguache Municipal	04V	Non-NPIAS
Walden	Walden-Jackson County	33V	Non-NPIAS

**Note: Northern Colorado Regional (FNL) does not currently provide scheduled commercial service. However, commercial service is expected to return to the facility once the remote tower has been approved by the FAA.*

Source: Kimley-Horn, 2019

Figure 5.4. 2020 CASP Airport Classifications



Source: Kimley-Horn, 2019

Table 5.11 highlights the 11 NPIAS airports in the Colorado system with different classifications at the federal and state levels. Eight airports have a higher classification at the state level, while three airports are higher in the federal system.

Table 5.11. 2019-2023 ASSET versus 2020 CASP Classifications

Associated City	Airport Name	FAA ID	ASSET Classification	2020 CASP Classification
Alamosa	San Luis Valley Regional	ALS	Local	Commercial Service
Buena Vista	Central Colorado Regional	AEJ	Basic	GA-Local
Cortez	Cortez Municipal	CEZ	Local	Commercial Service
Fort Collins/ Loveland	Northern Colorado Regional*	FNL	Regional	Commercial Service
Granby	Granby-Grand County	GNB	Local	GA-Community
La Junta	La Junta Municipal	LHX	Basic	GA-Local
Monte Vista	Monte Vista Municipal	MVI	Local	GA-Community
Pueblo	Pueblo Memorial	PUB	Regional	Commercial Service
Telluride	Telluride Regional	TEX	Local	Commercial Service
Walsenburg	Spanish Peaks Airfield	4V1	Basic	GA-Local
Wray	Wray Municipal	2V5	Local	GA-Community

**Note: Northern Colorado Regional (FNL) does not currently provide scheduled commercial service. However, commercial service is expected to return to the facility once the remote tower has been approved by the FAA.*

Sources: FAA NPIAS, 2019-2023; Kimley-Horn, 2019

5.6. Facility and Service Objectives

An effectual and well-functioning airport system provides a full suite of facilities and services needed to meet the needs of all airport users. During the system planning process, it is important to identify the facilities and services that allow airports to optimally support their functions at the local, state, and federal levels (as applicable). Facility and service objectives provide the minimum recommended guidelines by classification regarding the infrastructure, facilities, and services required to best support the type and volume of aviation activity typified by that classification. They offer specific guidance on how airports can improve their abilities to serve constituents and enhance the statewide aviation system.

It is important to note that these objectives are not requirements or mandates but serve as guidelines for airports and CDOT Division of Aeronautics to use during the airport planning process. An airport that offers facilities and services above or below these objectives can still be fulfilling its role based on local needs and context; however, the inability to meet certain guidelines may impact the future efficacy of the overall system. While individual airports should consider these objectives when planning for future development, specific needs should be discussed with CDOT Division of Aeronautics and the FAA and be tailored to each airport depending on existing and anticipated future needs. The reduction or removal of existing facilities and services is not considered during the system analysis as an airport with facilities or services above the objectives for its classification may have airport-specific needs that are greater than those identified in the CASP.

5.6.1. Defining Facility and Service Objectives

The facility and service objectives of the 2020 CASP represent the components of an airport with the greatest potential to significantly impact or support the type and amount of activity that normally occurs there. This study evaluated the following airport components for each of the classifications of the Colorado aviation system:

- Airport Reference Code (ARC)
- Runway length (ability to accommodate a certain percentage of existing aircraft by type)
- Runway width (feet)
- Runway strength (single-wheel landing gear in pounds)
- Taxiway (full parallel, partial parallel, connectors, or turnarounds)
- Runway markings (precision, non-precision, basic RW)
- Approach (precision, localizer precision with vertical guidance [LPV], near-precision approach, non-precision approach, visual)
- Visual aids (rotating beacon, lighted wind cone, wind cone, runway end identifier lights [REILs], precision approach indicator lights [PAPIs], visual glide slope indicators [VGSIs], approach lighting systems [ALS])
- Runway lighting (high intensity runway lighting [HIRL], medium intensity runway lighting [MIRL], low intensity runway lighting [LIRL], reflectors)
- Weather reporting (ATCT, ASOS, AWOS, Automated Unicom, dual barometers)
- Terminal: commercial service (CS) and/or GA (ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations, ratio of terminal square footage to passenger enplanements and itinerant operations, facility with restrooms, flight planning space, WiFi, and rest area)
- Apron tie-downs (tie-downs for percentage of based aircraft fleet plus percentage of weekly average overnight storage during peak season)
- Hangars (hangars for percentage of aircraft fleet plus percentage of weekly average overnight transient storage)
- Maintenance/snow removal equipment (SRE) storage building
- Electric vehicle charging stations
- Perimeter security (full perimeter fencing with security gates and appropriate signage, aircraft operations area [AOA] three-wire fencing with appropriate signage)
- Jet A fuel (full service, 24/7 self-service, or call-out)
- AvGas fuel (full service, 24/7 self-service, or call-out)
- Aircraft de-icing (including fluid collection and dedicated de-icing area)
- Sustainability plan

Table 5.12 presents the facility and service objectives defined for each of the six classifications of Colorado's system airports. In some cases, it is recommended that airports maintain existing facilities and/or services, as it is assumed that they meet the local and/or regional needs but are not required by all airports within that classification to most effectively serve the needs of typical airport users.

Table 5.12. Colorado System Airport Facility and Service Objectives by Classification

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Airfield						
ARC	C-III/C-II*	C-II	B-II	B-II	B-I	B-I
Runway length	Align with Master Plan	Align with Master Plan	Align with Master Plan	Accommodate 100% of small aircraft adjusted for altitude and mean maximum daily temp during hottest month	Accommodate 75% small aircraft adjusted for altitude and mean maximum daily temp during hottest month	Maintain existing
Runway width	150 feet/100 feet	100 feet	75 feet	75 feet	60 feet	60 feet
Runway strength	60,000 pounds	60,000 pounds	30,000 pounds	30,000 pounds	12,500 pounds	12,500 pounds
Taxiway	Full parallel	Full parallel	Full parallel	Partial parallel	Turn-arounds	Maintain existing
Runway markings	Precision	Precision	Non-precision	Non-precision	Non-precision	Basic
Lighting/Navigational Aids (NAVAIDs)						
Approach	Precision	Precision	Non-precision with vertical guidance	Non-precision	Non-precision	Maintain existing
Visual aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Wind cone
Runway lighting	HIRL or MIRL	HIRL or MIRL	MIRL	MIRL	MIRL	Reflectors
Weather reporting	On-site ASOS or AWOS	On-site ASOS or AWOS	On-site ASOS or AWOS	On-site ASOS, AWOS, or Automated Unicom	On-site ASOS, AWOS, or Automated Unicom	Non-certified weather

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Landside Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Acceptable ratio of terminal square footage to passenger enplanements and itinerant operations	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Based on community need
Apron tie-downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	Tie-downs for 100% of based aircraft fleet
Hangars	Hangars for 80% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 60% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 60% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage	Hangars for 40% of based aircraft fleet	Based on community need
Maintenance/SRE storage building	Yes	Yes	Yes	Yes	Based on community need	Based on community need
Electric vehicle charging station	Yes	Yes	Yes	Yes	Based on community need	Based on community need
Perimeter security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	AOA three-wire fencing with appropriate signage	AOA three-wire fencing with appropriate signage	AOA three-wire fencing with appropriate signage

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Services/Other						
Jet A fuel	Full service	Full service	Full service	24/7 (self-serve or call out)	Based on community need	Based on community need
AvGas fuel	Full service	Full service	Full service	24/7 (self-serve or call out)	24/7 (self-serve or call out)	Based on community need
Aircraft de-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection	Dedicated de-icing area	Based on community need	Based on community need	Based on community need
Courtesy car	Yes	Yes	Yes	Yes	Yes	Based on community need
Sustainability plan	Yes	Yes	Yes	Based on community need	Based on community need	Based on community need

**Note: Runway design standards should be determined by individual airports based on airport-specific needs and aviation demand.*

Source: Kimley-Horn, 2019

5.7. Classifications Summary

The 2020 CASP adopted a systematic, data-driven flow chart methodology to classify Colorado's 66 system airports. This methodology determines the classifications airports fall into based on clear criteria to provide insight into how each airport operates in its local, regional, and statewide contexts. This methodology is straightforward, aligns with existing state and federal policies, and reflects the current conditions and needs of Colorado system airports. Facility and service objectives were then identified for each classification. These objectives provide minimum development guidance to help airports optimally support the type and volume of aviation activities that typically occur there. The classifications and facility and service objectives identified in this chapter are used as the baselines for the subsequent analyses of the 2020 CASP.

CHAPTER 6: Existing System Performance

2020 Colorado Aviation System Plan

Chapter 6. Existing System Performance

6.1. Introduction

As previously mentioned in **Chapter 1. Study Design and Goals**, the 2020 Colorado Aviation System Plan (CASP) goals were developed by reviewing multiple existing resources and conducting extensive stakeholder engagement. Existing resources included the current Statewide Transportation Plan 2040 (*Transportation Matters [SWP 2040]*), the CDOT Division of Aeronautics' *2018 Strategic Plan*, and the 2011 CASP. Four goal categories were ultimately established following consultation from both the 2020 Project Advisory Committee (PAC) and CDOT Division of Aeronautics. The 2020 CASP goals are as follows:

1. **Safety and Efficiency**: Advance Colorado's airport system by promoting and preserving safe and efficient facilities, on and off airport.
2. **Access and Mobility**: Provide Colorado's airports with infrastructure and sufficient capacity enabling the public adequate access and mobility utilizing the aviation system.
3. **Economic Sustainability**: Support sustainable economic growth and development and continue Colorado's existing status as a leader in technology, testing, and the aerospace industry.
4. **System Viability**: Preserve airport system assets to promote fiscal responsibility and sustainable, cost-effective investments to ensure the system's long-term viability.

This chapter has two primary sections: 1) analysis of performance measures (PMs) and system indicators (SIs) by goal category, and 2) evaluation of facility and service objectives. PMs and SIs were developed as tools to measure the system's ability to achieve each goal category. PMs and SIs are both important components of assessing system-wide performance, but they serve different functions. PMs quantitatively evaluate specific aspects of system performance that can be directly affected by project funding, policies, and other external inputs (actionable by CDOT Division of Aeronautics). SIs serve as a reporting mechanism on aspects of system performance (informational). SIs are not necessarily all actionable, in that many may not be affected by funding, policies, and inputs. Some SIs may influence a policy decision and/or be related to a PM that has an action associated with enhancing the system's performance. Facility and service objectives provide the minimum recommended guidelines regarding the infrastructure, facilities, and services required to best support the type and volume of aviation activity associated with the Colorado airport system classifications. They offer specific guidance on how airports can improve their abilities to serve constituents and enhance the statewide aviation system. A complete list of the facility and service objectives by airport classification can be found in **Chapter 5. Airport Role and Classification Analysis**. It should be noted that the analysis of PMs and SIs and the evaluation of facility and service objectives are reported system-wide and by airport classification. Individualized facility and service objectives by airport can be viewed in **Appendix B. Airport Report Cards**. The report cards showcase each airport's existing conditions, specified facility and service objectives, and if the airport meets their objectives. A comprehensive list of system-wide performance for PMs, SIs, and facility and service objectives organized by airport classification can be found in **Appendix C. 2018 Performance Data**.

6.2. Goal: Safety and Efficiency

Safety and Efficiency

As presented in **Chapter 1. Study Design and Goals**, Safety and Efficiency was identified as the first goal of the 2020 CASP to advance Colorado's airport system by promoting and preserving safe and efficient facilities, on and off airports. It is essential that the safety of pilots and passengers in the sky, as well as individuals and property on the ground, remain at the forefront of all policies, projects, procedures, and other components of aviation. It is for this reason that safety is one half of the first goal for the 2020 CASP. In conjunction with safety is the importance of efficiency. An aviation system must not only strive to be safe, but also efficient given the high costs of maintenance, construction, and operation of the facilities and the aircraft. Aviation systems operate interdependently which requires airports to operate efficiently to reduce delays and congestion which is inherently safer. There are many components that contribute to a safe and efficient system, and many of those components are reflected in the PMs and SIs included in this goal category.

6.2.1. Performance Measures

This section discusses the results of the PMs associated with the safety and efficiency goal category. PMs for this category include the following:

1. Percent of airports with approaches negatively impacted by obstructions
2. Percent of airports that have full perimeter wildlife fencing
3. Percent of airports that have adopted appropriate land use controls
4. Percent of NPIAS airports that meet current FAA design standards under AC 150/5300-13A

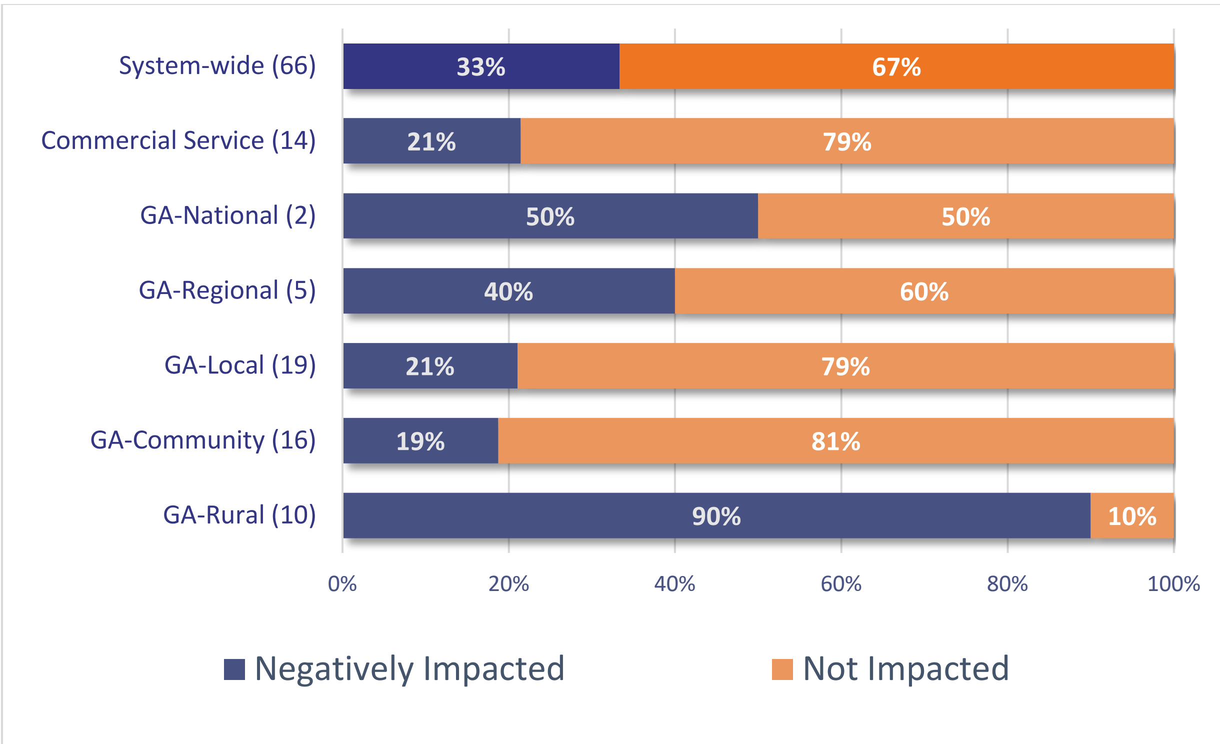
6.2.1.1. Percent of Airports with Approaches Negatively Impacted by Obstructions

The presence of an obstruction that negatively impacts the approach of a runway can cause safety concerns for system users both in the air and on the ground. When obstructions are present within the approach to a runway, it can result in the approach slope being modified so aircraft can clear the obstruction, the implementation of a displaced threshold, or both. When the approach slope is modified, visibility minimums are raised, requiring pilots to have the runway in sight at higher altitudes to land. This reduces the usability of an airport in times of reduced visibility and inclement weather. When obstacles cannot be relocated or mitigated, a displaced threshold may be implemented which relocates the threshold further down the runway, ultimately shortening the runway's available landing distance. As such, it is important to understand what percent of airports within the system have approaches that are negatively impacted by obstructions. Obstructions can include human-made infrastructure, such as buildings, transmission lines, and cell phone towers, as well as natural features like hills, mountains, and vegetation. **Figure 6.1** summarizes system-wide conditions on airports with approaches negatively impacted by controlling obstructions as reported by information from the FAA's Form 5010 Master Record. It should be noted that the following analysis is based only on each CASP airport's primary runway.

For **Figure 6.1** and all subsequent figures, the number of airports in each classification is denoted with parentheses next to the airport classification in the Y-axis (e.g., System-wide [66], Commercial Service [14], GA-National [2], etc.) to allow for ease of reference relative to the percent of airports that meet the associated PMs and SIs.

Per the findings of the analysis shown in **Figure 6.1**, 35 percent of system airports have approaches which are negatively impacted by obstructions. GA-Rural airports represent the airport classification with the highest percentage of airports with these types of obstructions at 90 percent. GA-Community airports comprise the lowest percentage of airports in their classification to have an obstruction which negatively impacts the approach to the runway.

Figure 6.1. Percent of Airports by Classification with Approaches Negatively Impacted by Obstructions



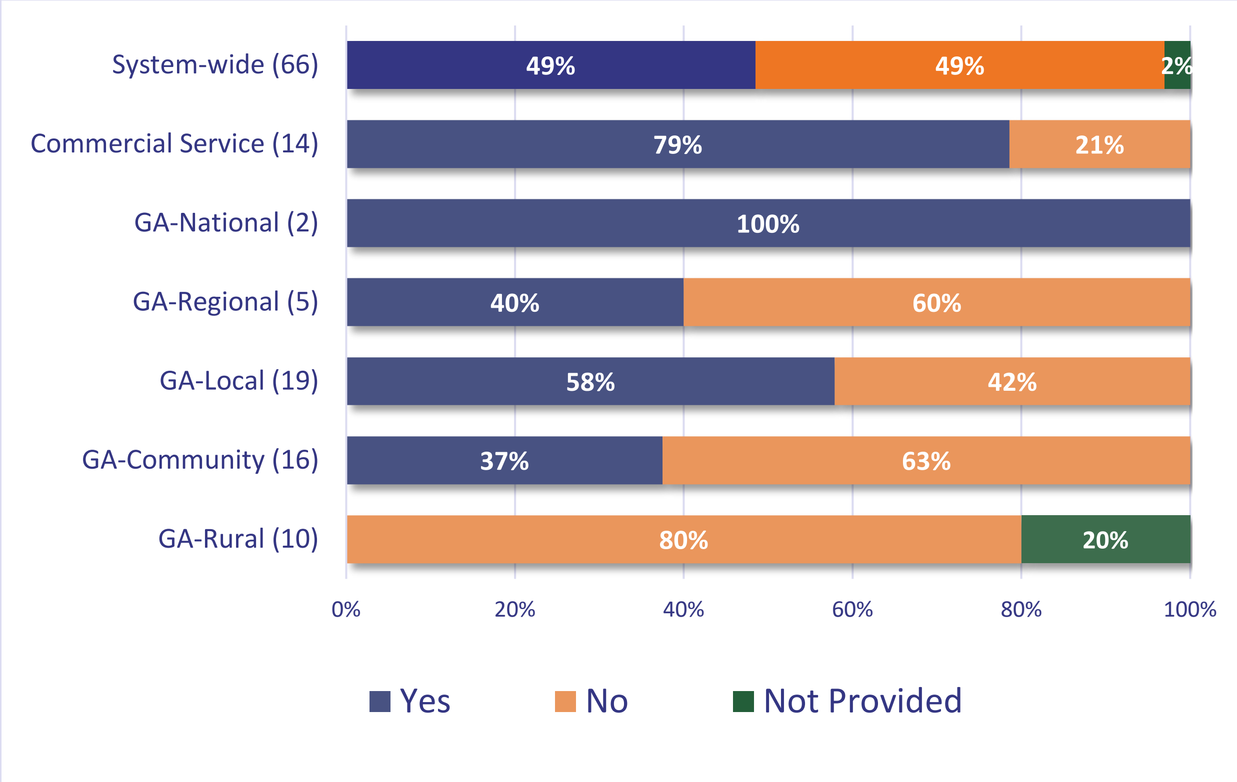
Source: FAA Form 5010, 2019

6.2.1.2. Percent of Airports that Have Full Perimeter Wildlife Fencing

Wildlife can present serious safety risks to airport operations, potentially endangering aircraft and their occupants, as well as the wildlife. Aircraft collisions with wildlife pose some of the most common and costly aircraft damage at airports. Mitigating these risks is essential to the continuity of safe and efficient aviation activity. One best practice for decreasing the impact of wildlife on airport safety is to reduce the opportunities for wildlife to enter airport property.

Based on airport manager responses, nearly 50 percent of airports system-wide report having full perimeter wildlife fencing. Approximately 80 percent of Commercial Service airports and all GA-National airports have full perimeter wildlife fencing. In addition, GA-Regional (40 percent), GA-Local (58 percent), and GA-Community (37 percent) airports report having full perimeter wildlife fencing. Of the GA-Rural airports that responded to this element of the data request, none had full perimeter wildlife fencing. **Figure 6.2** presents airports system-wide and by classification that have full perimeter wildlife fencing.

Figure 6.2. Percent of Airports by Classification that Have Full Perimeter Wildlife Fencing



Source: 2018 Inventory & Data Form

6.2.1.3. Percent of Airports that Have Adopted Appropriate Land Use Controls

Establishing land use controls in the surrounding areas near airports helps minimize hazards to aircraft in flight and the surrounding community. It is also a requirement of airports that accept FAA grants. FAA Grant Assurance 21 includes the following language applicable to these airports:

> *(airports) must take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft.*

The purpose of this is to "to protect the federal investment through the maintenance of a safe operating environment."[1] While the concept of land use control may take different forms in different communities, it is most often employed through municipal and county zoning, development standards (such as height restrictions), and building codes. Some communities focus their effort only on enforcing height limitations for new development, while others focus on controlling the type of underlying land uses permitted. In either case, implementing land use controls around airports help prevent or mitigate the development of incompatible land uses which would otherwise negatively impact (or be negatively

[1] Airport Cooperative Research Program (ACRP) Report 27: *Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources (2010)*

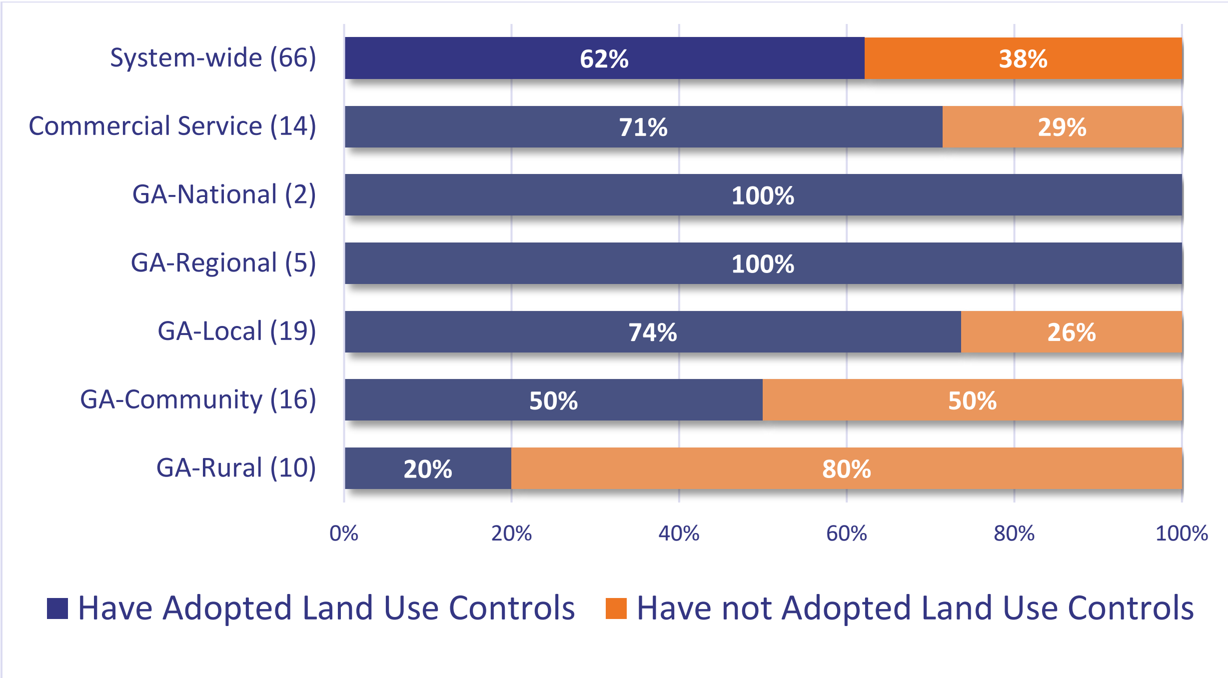
impacted) by aviation activity. In Colorado, this can often be challenging as many airports are in or near cities or counties that have potential land use impacts on an airport but may not themselves be sponsors subject to FAA grant assurances.

The FAA has encouraged land use protection in several advisory circulars (ACs) that provide guidance to airports on development of compatible land uses, discouraging incompatible uses such as residential or tall structures within the surrounding navigable airspace, and mitigating negative noise impacts on local communities. Due to the uniqueness of each airport, the form or method of implementing controls differs according to the needs of the airport and the surrounding community. It is important to realize that airports as an operating entity on their own cannot implement land use controls. Some airport owners and sponsors can zone in their own political subdivision, but many airports require protection or control outside their boundaries. Although the FAA highly recommends that airports obtain ownership of areas closest to the airport to implement safety practices such as for their runway protection zones (RPZs), airports must work in partnership with the appropriate counties and cities that are responsible for zoning.

Airports were asked about the presence of aviation-related land use controls in their surrounding communities. **Figure 6.3** and **Figure 6.4** show the percent of airports that report their local zoning authority has adopted aviation-related land use controls or height regulations by airport role.[2] Systemwide, more than half of all airports report that their local zoning authority has adopted both aviation-related land use (58 percent) and height controls (62 percent) associated with protecting the airport and community. All GA-National and GA-Regional airports report their local zoning authority has implemented both land use controls and height regulations related to their airports. GA-Rural airports report that their local zoning authority has implemented height controls for 10 percent their airports and land use controls for 20 percent of their airports.

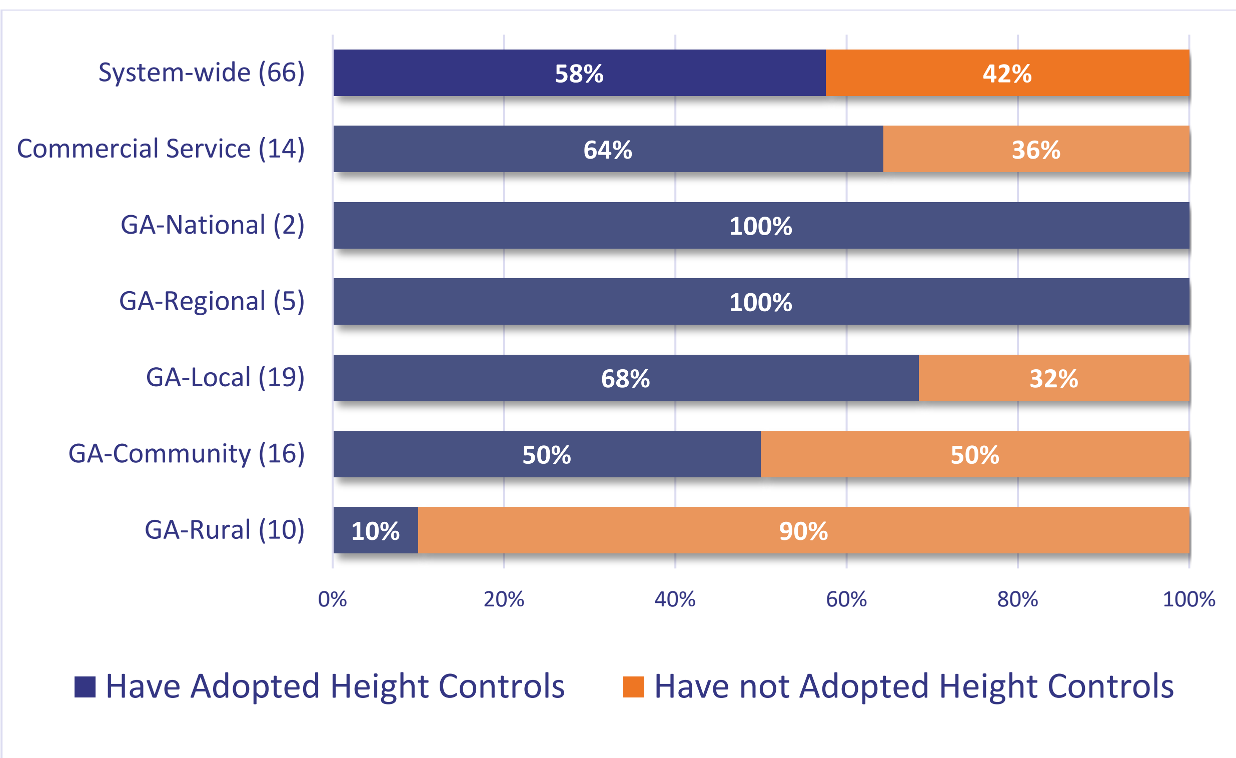
[2] In some cases, a community may impact more than one jurisdiction such as multiple cities and/or counties and may or may not impact jurisdictions beyond those of the airport sponsor. Airports were asked whether their local zoning authority adopted land use and height regulations during the inventory effort, but specific details on the number of impacted jurisdictions was not obtained from all airports.

Figure 6.3. Percent of Airports by Classification with Land Controls



Source: 2018 Inventory & Data Form

Figure 6.4. Percent of Airports by Classification with Height Controls



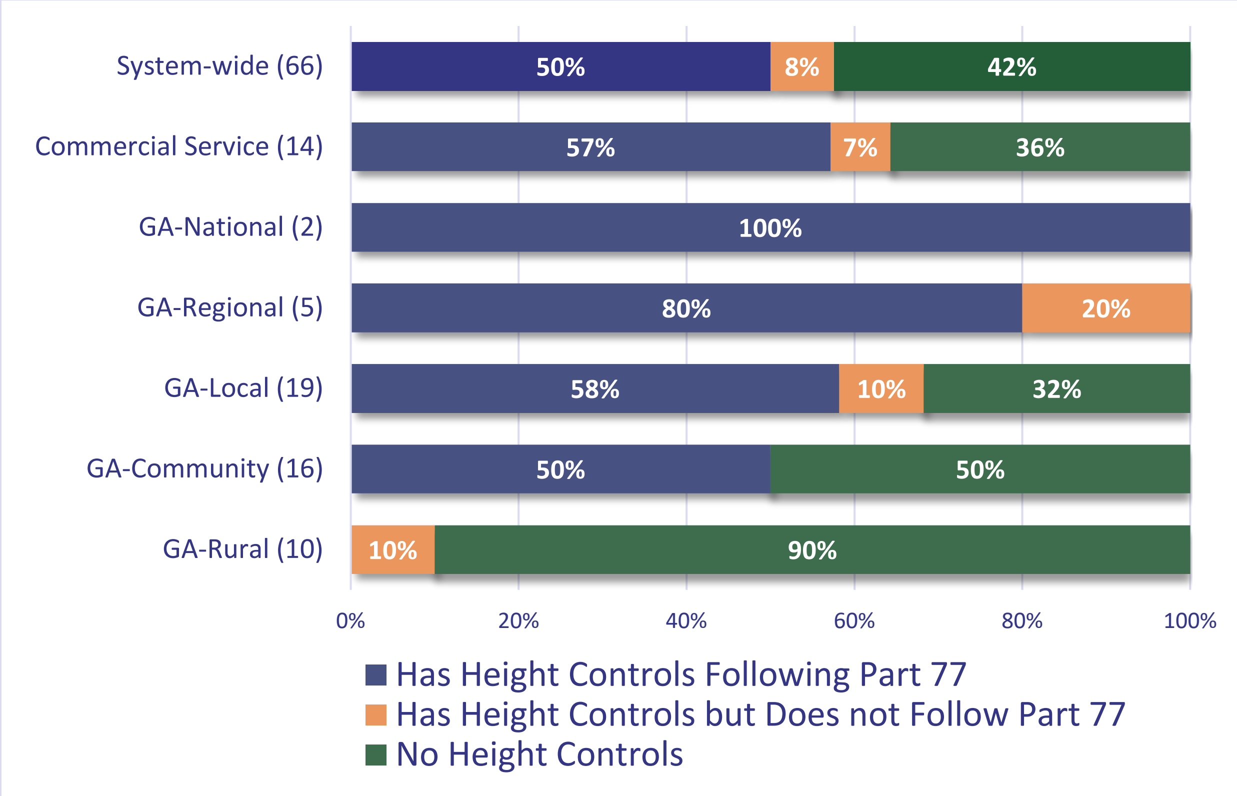
Source: 2018 Inventory & Data Form

To regulate the National Airspace System (NAS), the FAA enacted Title 14 of the Code of Federal Regulations (CFR), Part 77: Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77). 14 CFR Part 77 established the requirements and means to evaluate the effect of the height of proposed construction or alteration of an existing structure on the safe and efficient use of navigable airspace, as well as navigational and communication facilities and equipment. To accomplish this, 14 CFR Part 77 established a set of "imaginary surfaces" around an airport's runways. Development proposed within these surfaces is subject to FAA notification and review to determine if the development (height) poses a threat to the safe navigation of the NAS.

Airports that indicated their local zoning authority has adopted height zoning were also asked if the height zoning follows 14 CFR Part 77 requirements. Local adoption of height zoning requirements that mimic federal requirements help align compatible land use efforts at multiple levels of government. Additionally, it can provide for the enforcement of FAA findings if the FAA determines a development to be a hazard (the FAA can determine a development to be a hazard, but they cannot prohibit the development).

Figure 6.5 shows the percent of airports that reported their zoning authority's height zoning follows Part 77. System-wide, 50 percent of airports have height zoning that follows the requirements set in Part 77, whereas eight percent of airports have height zoning that does not follow 14 CFR Part 77 and 42 percent do not have height zoning. Commercial service airports follow closely to the system-wide performance with 57 percent having these height controls, seven percent with height controls that do not follow 14 CFR Part 77, and 36 percent that do not have height controls. All GA-National airports have height controls which follow Part 77 requirements. GA-Rural airports report 10 percent of airports having height controls that do not follow 14 CFR Part 77 and 90 percent without height zoning.

Figure 6.5. Percent of Airports by Classification with Height Zoning Following Part 77



Source: 2018 Inventory & Data Form

Additionally, a high-level evaluation was conducted to understand existing land use conditions surrounding Colorado system airports. This evaluation identified incompatible land uses within each airport's 14 CFR Part 77 imaginary surfaces to provide supplementary information about developments taking place near airports. Of the 41 airports system-wide that indicated they have some form of land use or height controls, all were identified as having some form of incompatible use and/or potential height issues located within their established 14 CFR Part 77 surfaces. Per the evaluation, the incompatible land uses that were identified include the following categories: residential developments, major developments, water bodies, and landfills. The full analysis and findings for incompatible land uses within 14 CFR Part 77 is provided in **Appendix A. Land Use Evaluation**.

6.2.1.4. Percent of NPIAS Airports that Meet Current FAA Design Standards Under AC 150/5300-13A

FAA established airport design criteria to facilitate safe operations. These design criteria are continually evaluated by the FAA's technical teams to determine necessary changes based on changes to aircraft including new aircraft that may be faster or have wider wing spans or other equipment, and to increase operational safety for aircraft and their pilots and passengers. Most recently, the FAA addressed potential risk areas resulting from previously established standards, especially taxiway geometries, Runway Safety Areas (RSAs), and Runway Protection Zones (RPZs). The following section analyzes these standards related to NPIAS-only CASP airports. Non-NPIAS airports were excluded from this analysis because they are not federally obligated to meet the standards, and as such, do not receive federal funding to meet the FAA standards.

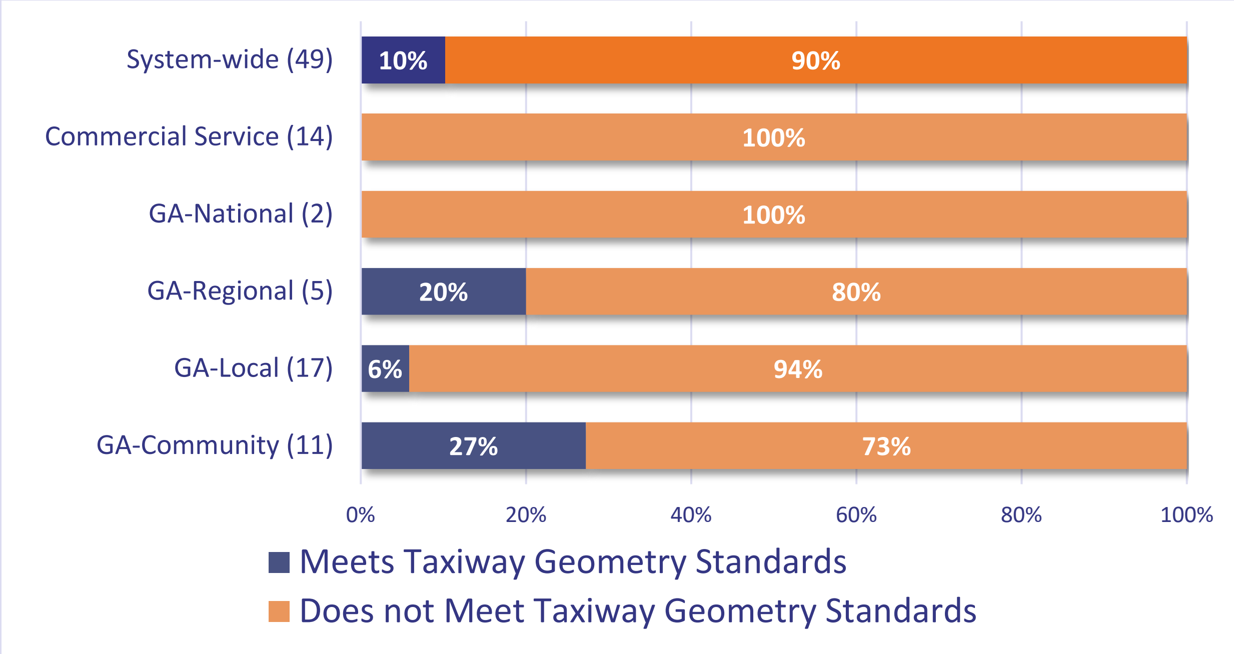
One of the implemented new standards focuses on mitigating potential "hot spots" or areas of the airfield in which design may create a higher risk of or incursions or loss of separation. Subsequently, taxiway design standards were updated by the FAA in 2014 to reflect standards meant to increase pilots' situational awareness when navigating their aircraft across airports. These new standards are in sharp contrast to the historical taxiway design standards that have been used for many years in airport planning and design. This results in many airports not meeting the current FAA taxiway design standards which are not specific to Colorado. It is important to note that many of these issues are only due to more recent changes in FAA design criteria than when the infrastructure was originally planned and constructed. Airport taxiways were reviewed to assess the presence of the following three design concerns on their taxiways that were noted in the FAA's AC 150/5300-13A, Change 1 (updated in February 2014):

- Direct access to the runway
- Three-node intersection
- Wide expanse of pavement

Airports that receive federal funding are recommended to meet the FAA's standards as outlined in their ACs, however, if FAA funding is used to implement projects, airports are required to comply with FAA airport design standards as part of their grant assurances. For this analysis, all taxiways at NPIAS airports were reviewed to assess the existence of the three design concerns listed above. If any taxiway on the airfield was identified as having one of the three design concerns, the airport was considered as not meeting the FAA taxiway design standards for this PM. Many airports have more than one taxiway serving the airfield. While each taxiway was evaluated, the airport was considered to meet the current FAA design standards only if they did not have any instances of the three previously identified design concerns. The intent of this analysis was to identify the airports that require future airfield geometry updates. The FAA has funded and continues to fund taxiway geometry re-designs, primarily as part of other projects, not as stand-alone projects to address a singular taxiway geometry issue. Large-hub commercial service airports were given priority from the FAA, as well as others that were noted to have numerous hot spots or have experienced a high number of runway incursions that may be associated with taxiway design. It is not a surprise that many general aviation airports in Colorado, as well as in the U.S., have non-standard taxiways on their airfields given that this standard was updated only recently and is significantly different to prior standards on which many airports were developed.

Based on an analysis conducted using Google Earth and airport layout plans (ALPs), 10 percent of NPIAS airports system-wide were identified as meeting current standard taxiway geometries. Of all Commercial Service, GA-National, and GA-Regional airports, only one meets current standard taxiway geometry. Twenty-seven percent of GA-Community airports have standard taxiway geometries which represents the most in any classification. **Figure 6.6** summarizes the results of this analysis system-wide and by airport classification for the NPIAS airports.

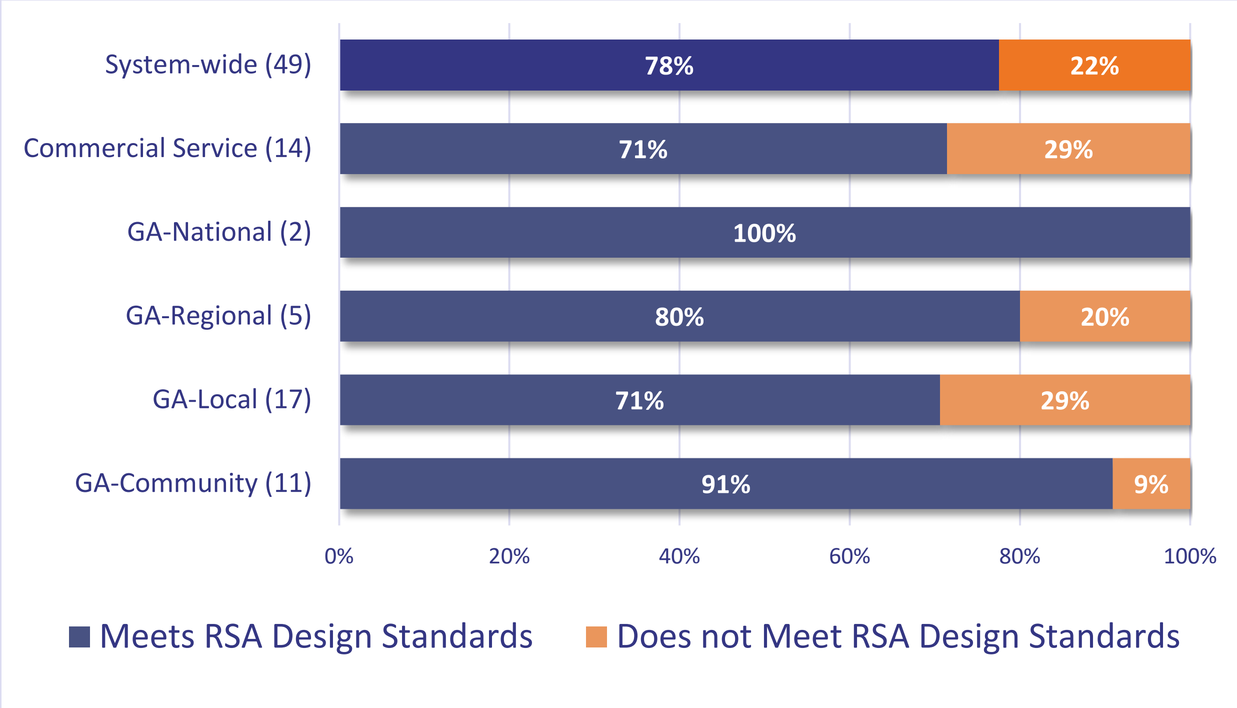
Figure 6.6. Percent of NPIAS Airports that Meet Current FAA Taxiway Geometry Standards



Note: GA-Rural airports were not included in the chart as there are no NPIAS airports in this classification.
Sources: ALPs; Google Earth; Kimley-Horn, 2019

Additional analysis included examination of the airports' RSAs. RSAs provide a buffer area around the runway to protect aircraft that may veer off the runway. For this analysis, an RSA was considered as meeting design standards if it appeared to be graded and clear of obstructions within the dimensions associated with the primary runway's design code using data and imagery available from airport master plans, ALPs, and Google Earth. The analysis revealed that 78 percent of NPIAS system airports have primary runways that meet FAA RSA design standards. **Figure 6.7** presents the NPIAS system-wide results, including by airport classification, related to the RSA component of the PM.

Figure 6.7. Percent of NPIAS Airports that Meet RSA Standards



Note: GA-Rural airports were not included in the chart as there are no NPIAS airports in this classification.
Sources: Airport master plans; ALPs; Google Earth; Kimley-Horn, 2019

Finally, an analysis was conducted to examine the existence of incompatible uses and objects within each airport's runway protection zones (RPZs) as another metric of meeting this PM. RPZs represent trapezoidal safety buffer areas extending out from the end of each runway end. Having airport-controlled RPZs free from incompatible uses and objects reduces the risk during takeoff and/or landing of an aircraft near runway ends. System-wide, public roadways are the most common incompatible uses existing within RPZs with 51 airports having some sort of roadway in this defined area. Fifteen airports were identified to have buildings and three were identified as having another incompatible land use present. The full analysis related to objects or obstructions and/or incompatible land uses within each CASP airport's runway RPZ is provided in **Appendix A. Land Use Evaluation**.

6.2.2. System Indicators

The following section discusses the results of SIs associated with the safety and efficiency goal category. These SIs include:

1. Percent of airports with adequate crosswind coverage
2. Percent of airports that meet runway length requirements for existing critical aircraft
3. Percent of airports that have a formalized process for receiving, managing, and responding to on-/near-airport Unmanned Aircraft Systems (UAS) use requests
4. Percent of airports with the level of activities to warrant an Air Traffic Control Tower (ATCT)
5. Percent of communities with emergency responders that have basic training in Aircraft Rescue and Firefighting (ARFF)

6. Percent of airports that support Aerial Firefighting
7. Percent of airports that support medical/emergency evacuation aircraft

6.2.2.1. Percent of Airports with Adequate Crosswind Coverage

Another important component of evaluating a safe and efficient airport system is understanding the level of crosswind coverage at system airports. FAA planning standards indicate that an airport should be capable of operating under allowable wind conditions at least 95 percent of the time. If crosswind coverage is lower than 95 percent, a crosswind runway may be needed. Crosswind coverage at CASP airports was determined using the FAA's Airport Data and Information Portal (formerly known as the Airports Geographic Information System or AGIS) wind coverage tool. This tool uses the crosswind component associated with each airport's runway design code (RDC) (shown in **Table 6.1)** for the primary runway, and wind data obtained from the airport's weather reporting station. If an airport did not have on-site weather reporting, the weather station from the next closest airport was used.

Table 6.1. Allowable Crosswind Component per RDC

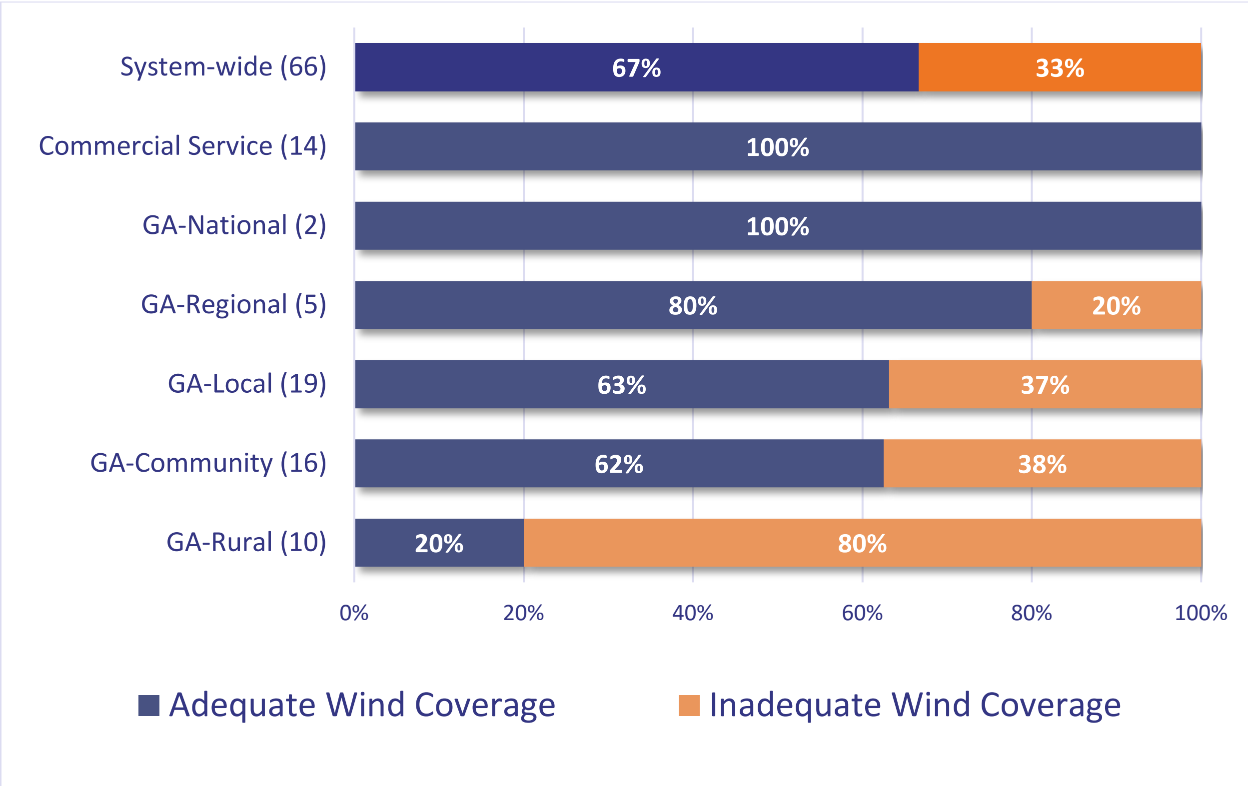
RDC	Allowable Crosswind Component
A-I and B-I*	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through C-III, D-I through D-III	16 knots
A-IV and B-IV, V-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

**Includes A-I and B-I small aircraft.*

Source: FAA AC 150/5300-13A, Change 1

System-wide, two-thirds of primary runways at CASP airports have adequate crosswind coverage which includes all Commercial Service and GA-National airports. Adequate crosswind coverage decreases by classification type. Of the 52 GA airports in the system (GA-National through GA-Rural), 58 percent have adequate crosswind coverage. Of the 17 Non-NPIAS airports in the CASP, seven (41 percent) have adequate crosswind coverage. **Figure 6.8** summarizes the system-wide results, and by classification, for adequate crosswind coverage.

Figure 6.8. Percent of Airports by Classification with Adequate Crosswind Coverage



Sources: FAA AC 150/5300-13A, Change 1; FAA Wind Analysis Tool, 2019; Kimley-Horn, 2019

6.2.2.2. Percent of Airports that Meet Runway Length Objectives for Existing Critical Aircraft

A runway's design should be based on the most demanding aircraft that regularly uses the runway, defined as 500 annual aircraft operations. Longer and wider runways accommodate more demanding aircraft that need longer distances to accelerate on takeoff and decelerate on landing. Meeting the runway length need enhances safety for pilots, passengers, and people and property on the ground. Runway length for primary runways at CASP airports were determined based on facility and service objectives criteria as shown in **Table 6.2**.

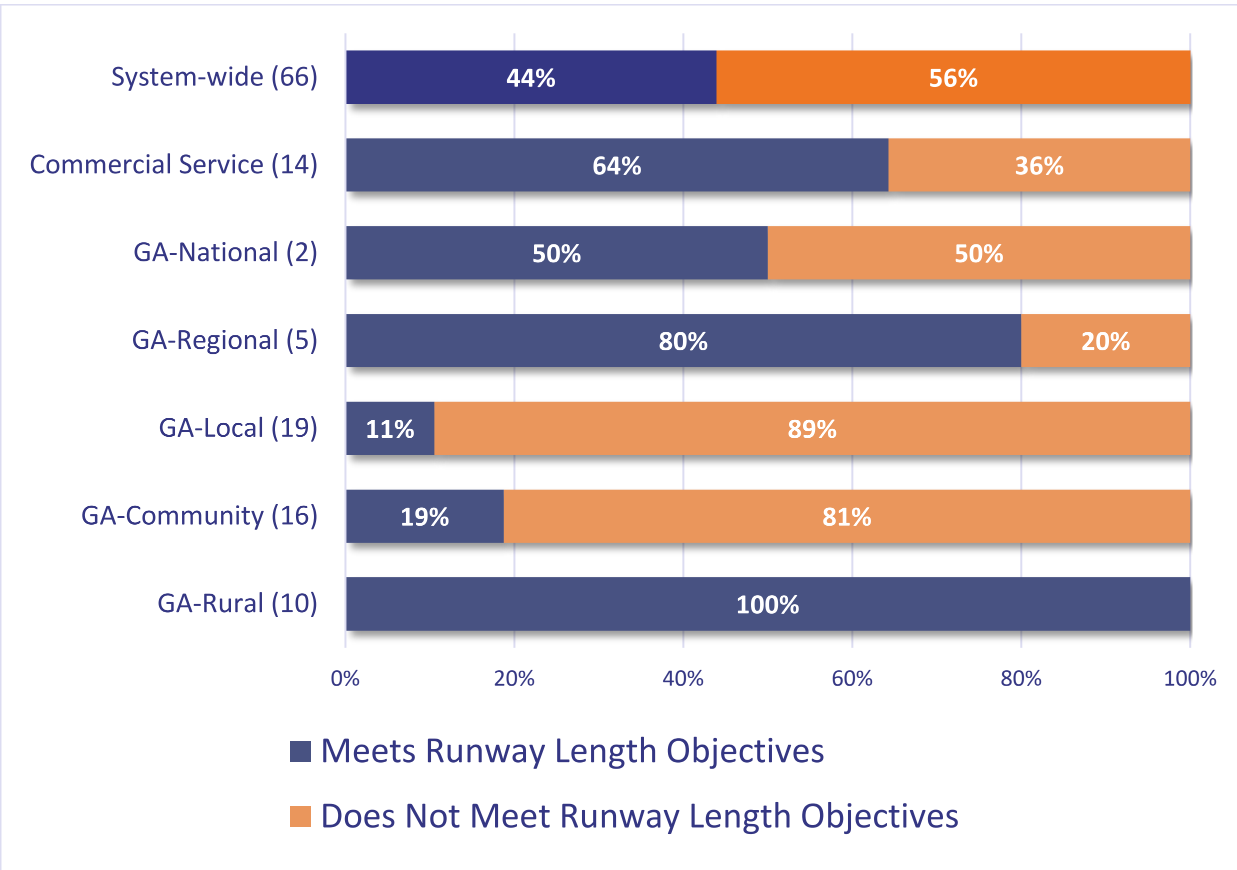
Table 6.2. Runway Length Objectives by Airport Classification

Airport Classification	Runway Length Objective
Commercial Service	Align with Master Plan
GA-National	Align with Master Plan
GA-Regional	Align with Master Plan
GA-Local	Accommodate 100 percent of small aircraft adjusted for elevation and mean daily maximum temperature of the hottest month
GA-Community	Accommodate 95 percent of small aircraft adjusted for elevation and mean daily maximum temperature of the hottest month
GA-Rural	Maintain existing

Sources: CDOT Division of Aeronautics, 2019; FAA AC 150/5325-4B, Runway Length Requirements; Kimley-Horn, 2019

System-wide, 44 percent of airports meet primary runway length objectives based on the facility objectives established for the 2020 CASP. Sixty-four percent of Commercial Service, 50 percent of GA-National, and 80 percent of GA-Regional airports have primary runways that meet the length objectives identified in the 2020 CASP. Eighty-nine percent of GA-Local and 81 percent of GA-Community airports do not meet the length objectives. It should be noted that many Colorado airport runway length objectives based on FAA guidance are greater than those for similar airports in other states or regions due to the state's high elevation and high temperature climate. **Figure 6.9** presents the system-wide results, and by airport classification, whose primary runways meet the CASP objective length.

Figure 6.9. Percent of Airports by Classification that Meet Runway Length Objectives



Sources: FAA AC 150/5325-4B, Runway Length Requirements; Airport master plans; ALPs; Kimley-Horn, 2019

6.2.2.3. Percent of Airports that Have a Formalized Process for Receiving, Managing, and Responding to on-/near-airport Unmanned Aircraft Systems (UAS) Use Requests

The implementation of UAS for recreational and commercial use has increased substantially in the last five years and is anticipated to continue growing around the world[3]. As more UAS are integrated into the national airspace system (NAS) the need to implement formal processes to manage UAS on and near airports becomes imperative to the safety of airport users, UAS operators, and the public. Enacting a

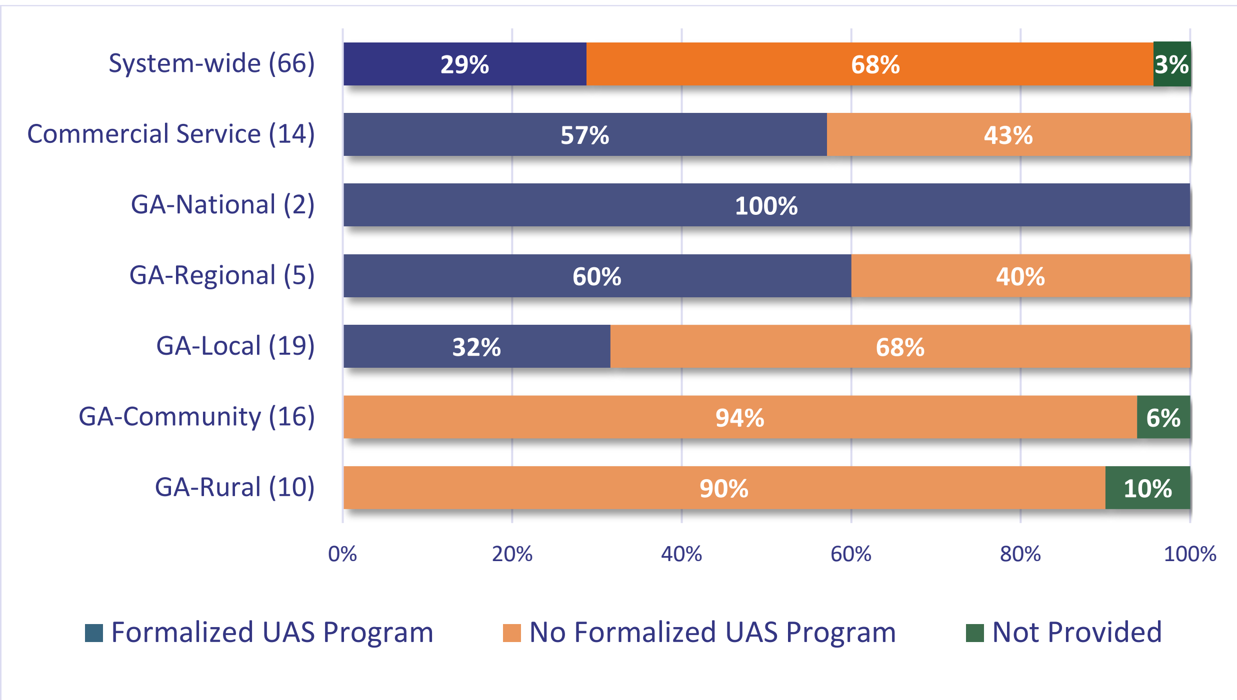
[3] FAA Aerospace Forecast FY 2019-2039: https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2019-39_FAA_Aerospace_Forecast.pdf

set of procedures to conduct safe UAS operations allows airports to actively monitor the existence of UAS near or within the airport's utilized airspace, effectively reducing the risk of collisions with aircraft.

As mentioned in **Chapter 2. Inventory of System Condition**, to better understand where UAS activity is occurring at or near CASP airports, and if those facilities have formal policies or processes to monitor, limit, or prohibit activity, airport managers were asked if their airport has a formal process to receive, manage, and respond to on/near-airport UAS use requests (e.g., AirMap).

Twenty-nine percent of CASP airports reported having a formalized UAS process. All GA-National airports and over half of GA-Regional and Commercial Service airports have a formalized UAS process. Thirty-two percent of GA-Local airports and none of the reporting GA-Community or GA-Rural airports have a formalized UAS process. System-wide, three percent of airports did not report this information all of which were Non-NPIAS airports in the GA-Community and GA-Rural airport classifications. **Figure 6.10** displays the system-wide results of this analysis.

Figure 6.10. Percent of Airports by Classification with a Formal UAS Process



Source: 2018 Inventory & Data Form

6.2.2.4. Percent of Airports with the Level of Activities to Warrant an Air Traffic Control Tower (ATCT)

As mentioned in **Chapter 2. Inventory of System Condition**, ATCTs are facilities located at some airports that facilitate the safe and efficient guidance of aircraft within the airport environs. Colorado has nine airports with ATCTs which include the following six Commercial Service and three GA airports:

- Denver International (DEN)
- Colorado Springs Municipal (COS)
- Aspen-Pitkin County (ASE)
- Eagle County Regional (EGE)
- Grand Junction Regional (GJT)
- Pueblo Memorial (PUB)
- Centennial (APA)
- Rock Mountain Metropolitan (BJC)
- Colorado Air and Space Port (CFO)

ATCTs are typically provided at airports that have high annual aircraft operation levels or complex operating environments. When an airport reaches an operational threshold, which is based on a variety of factors (e.g., number of operations and by type, number of runways, etc.), an ATCT may be needed to increase the safety and efficiency of aircraft moving within the airport environs. In Colorado, there are also factors such as seasonality that significantly affect an airport's activity compared to examining only annual operational activity.

ATCTs are expensive facilities that many nonprimary airports in the nation need but struggle to afford. CDOT Division of Aeronautics partnered with the FAA to implement the Colorado Remote Tower Project (CRTP) that is aiming to eliminate the need for expensive ATCT building infrastructure and operating costs, but still provide ATCT guidance and services. The remote tower uses a network of panoramic video and various static cameras securely mounted on steel masts on either end of a runway, as well as near the mid-point. The cameras give air traffic controllers a full 360-degree view of the airfield. The camera and radar-based surveillance data are fed to a remotely-located control center.[4] The remote tower is one of two being developed and tested in the U.S., but Colorado's is the first to combine the camera data reflecting ground activity with radar information, further enhancing the data available that can be provided to air traffic controllers increasing safety and efficiency.

In 2015, CDOT and the FAA undertook a site selection process to evaluate potential location(s) to test and assess remote air traffic technology. The airports evaluated included Aspen-Pitkin County (ASE), Durango-La Plata County (DRO), Northern Colorado Regional (FNL), Greeley-Weld County (GXY), and Montrose Regional (MTJ). FNL was ultimately selected for the CRTP based on site selection criteria that included type of airspace, existing primary and secondary surveillance coverage, daily operational level including aircraft mix, airport movement complexity, available instrument procedures, proximity to Denver and local FAA staff, accessibility for out of state travelers to reach the airport during testing, and stakeholder support. **Figure 6.11** presents the site selection matrix as reported in CDOT Division of Aeronautics' Colorado Site Decision Paper.

[4] CDOT Division of Aeronautics Remote Tower Project - https://www.codot.gov/programs/remote-tower/TheProject

Figure 6.11. Remote Tower Project Site Rankings

Criteria	Candidate Airports				
	Aspen	Durango	Fort Collins	Greeley	Montrose
Airspace Type	2	1	1	1	1
Existing Primary Surveillance Coverage	1	0	2	2	0
Existing Secondary Surveillance Coverage	0	2	1	1	2
Daily Operational Level	2	1	2	2	1
Aircraft Mix	1	1	2	1	1
Airport Movement Complexity	2	2	1	0	0
Instrument Procedures	1	1	1	1	1
Proximity to Denver & Local FAA	1	1	2	2	1
Accessibility for Out of State	1	1	2	2	1
Stakeholder Support	0	2	2	1	1
Weighted Overall Airport Score	**1.3**	**1.4**	**1.7**	**1.3**	**0.9**

Ranking	
	0= does not meet reqirements
	1= meets requirements
	2= excedes requirements

Source: CDOT Division of Aeronautics, 2015

CDOT Division of Aeronautics is interested in expanding the CRTP upon FAA certification of the FNL system. Given this program is in testing, FAA criteria for eligibility to establish an ATCT are expected to change once remote towers are proven. The current criteria are stringent, even to join the Federal Contract Tower Program, which is staffed by contract controllers, not FAA employees. There is a benefit-cost ratio that must be analyzed and criteria such as documented actual traffic counts and determining the present value of a visual flight rule (VFR) tower with the costs of a VFR tower over 15 years. The ratio of the benefits from the tower's operation compared to the tower's cost must exceed 1.0 to be considered. A significant factor in the tower's operational costs include the investment in facilities and equipment, as well as staffing, maintenance, supplies, and services. Because remote towers have the capability to service multiple airports from a single location, development and operating costs would be greatly reduced compared to traditional ATCTs.

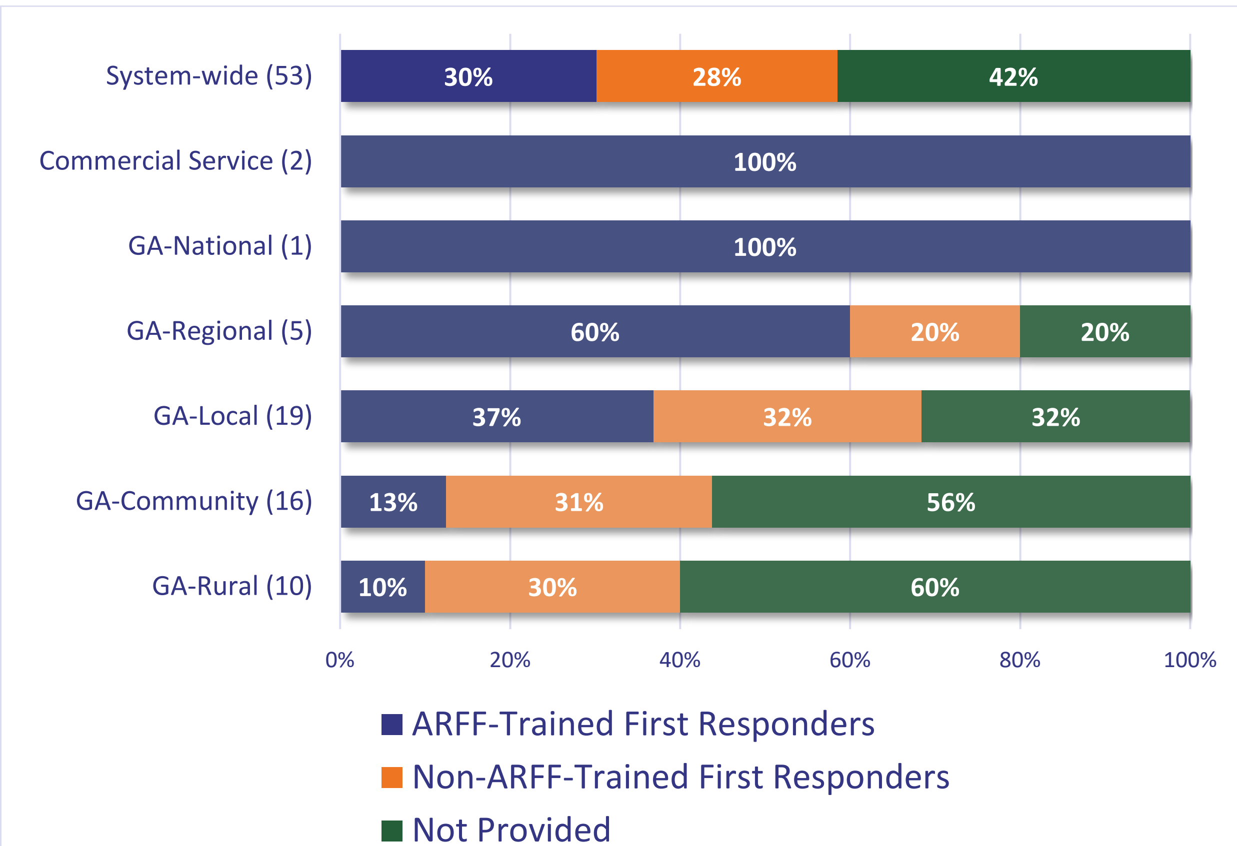
CDOT's initial site selection analysis shows that DRO, GXY, and ASE could be the next candidate(s) for the CRTP, however, other airports may be considered once the FNL tower is completely certified and operational. The 2020 CASP examined future annual aircraft operations projections compared to annual capacity estimates developed as part of the project (and discussed in **Chapters 7** and **8**) as a first step in examining airports that may need to be considered purely from an operational efficiency and capacity perspective. These future needs are evaluated in **Chapter 8. Future System Performance**.

6.2.2.5. Percent of Communities with Emergency Responders that Have Basic Training in Aircraft Rescue and Firefighting (ARFF)

Airports complying with Title 14 of the Code of Federal Regulations (CFR) Part 139 are required to have emergency response equipment (called Aircraft Rescue and Firefighting [ARFF] equipment) and personnel to respond to aircraft emergencies. As of May 29, 2019, and according to FAA's Part 139 Airport Certification Status List, there are 13 Colorado airports that are certified as Part 139 and therefore required to have ARFF equipment and trained personnel[5]. There are 53 CASP airports that are not required to have facilities and/or trained personnel at the airport and as such, those airports were asked during on-site visits to determine if local, off-airport first responders were trained to respond to airport and aircraft incidents.

Of the 13 Part 139 airports, 12 are classified as Commercial Service and one is classified as GA-National. Since Part 139 airports are required to have on-airport ARFF, they have been removed from this analysis. System-wide (not including Part 139 airports), 30 percent of airports have off-airport ARFF-trained first responders, 28 percent do not, and 42 percent of airports did not provide a response to this question. One hundred percent of Commercial Service airports (2 out of 2), and 60 percent of GA-Regional airports have off-airport emergency responders that have ARFF training. Over half of GA-Community and GA-Rural airports were unable to answer the question which makes it unlikely that local first responders are ARFF-trained. **Figure 6.12** documents the percent of airports that reported having off-airport first responders who have ARFF training.

Figure 6.12. Percent of Airports by Classification with ARFF-Trained First Responders



Source: 2018 Inventory & Data Form

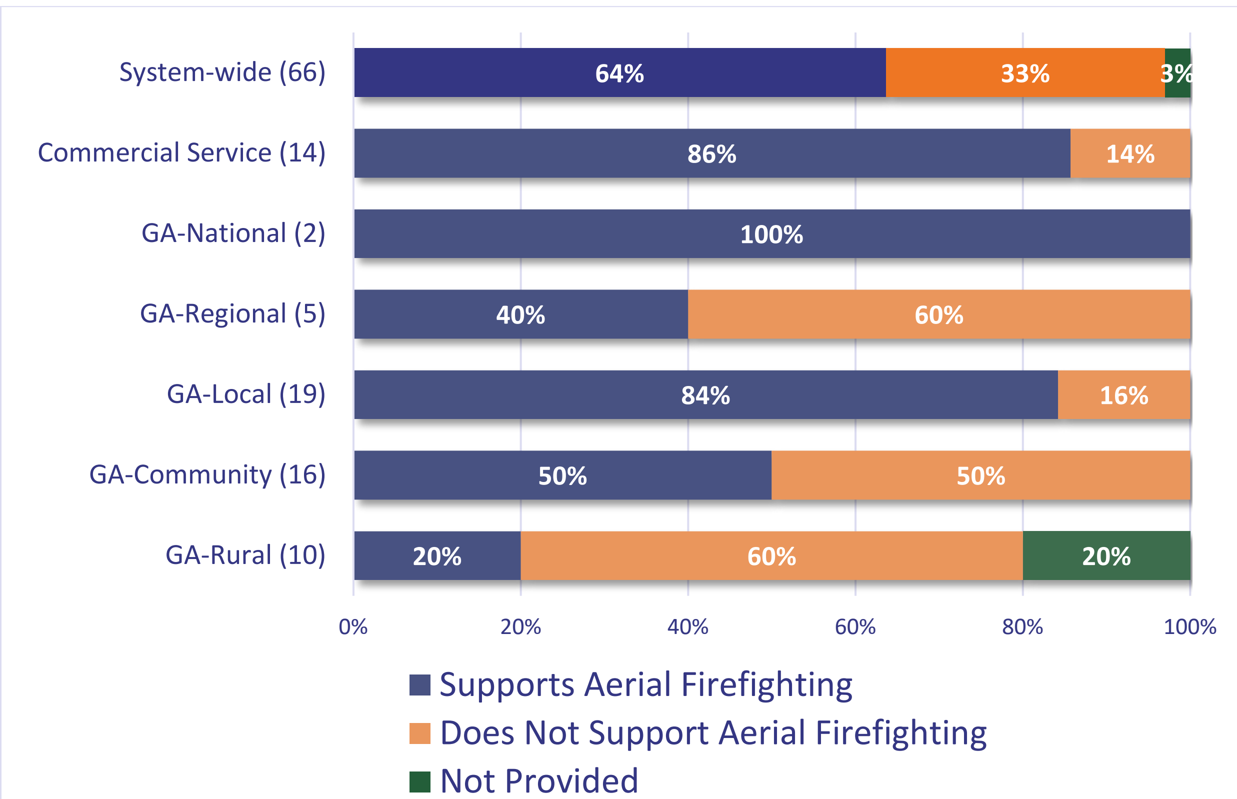
[5] FAA 14 CFR Part 139: Certification of Airports. January 2013. https://www.faa.gov/airports/airport_safety/part139_cert/

6.2.2.6. Percent of Airports that Support Aerial Firefighting

Aerial firefighting operations are often utilized to maintain control during prescribed burns used in wildland management and in containing life-threatening wildfires that have become more prevalent in Colorado and throughout the U.S. Aerial firefighting is conducted using specialized aircraft to support aerial suppression tactics and may be based either permanently or temporarily at nearby airports. In addition to these aerial suppression aircraft, other types of aircraft may be utilized to support aerial firefighting operations such as transporting firefighting personnel, delivering equipment and supplies, and providing important information about the location and behavior of prescribed and/or wildfires. Airports supporting aerial firefighting are key to the deliverance of suppression materials, supplies, and emergency response staff quickly and efficiently.

Based on airport management responses, 64 percent of airports report supporting aerial firefighting activities. GA-Local airports represent the largest portion of this activity type at 84 percent. Twenty percent of GA-Rural airports support aerial firefighting. **Figure 6.13** shows the percent of airports by classification that support aerial firefighting operations on-site as reported by airport managers.

Figure 6.13. Percent of Airports by Classification that Support Aerial Firefighting



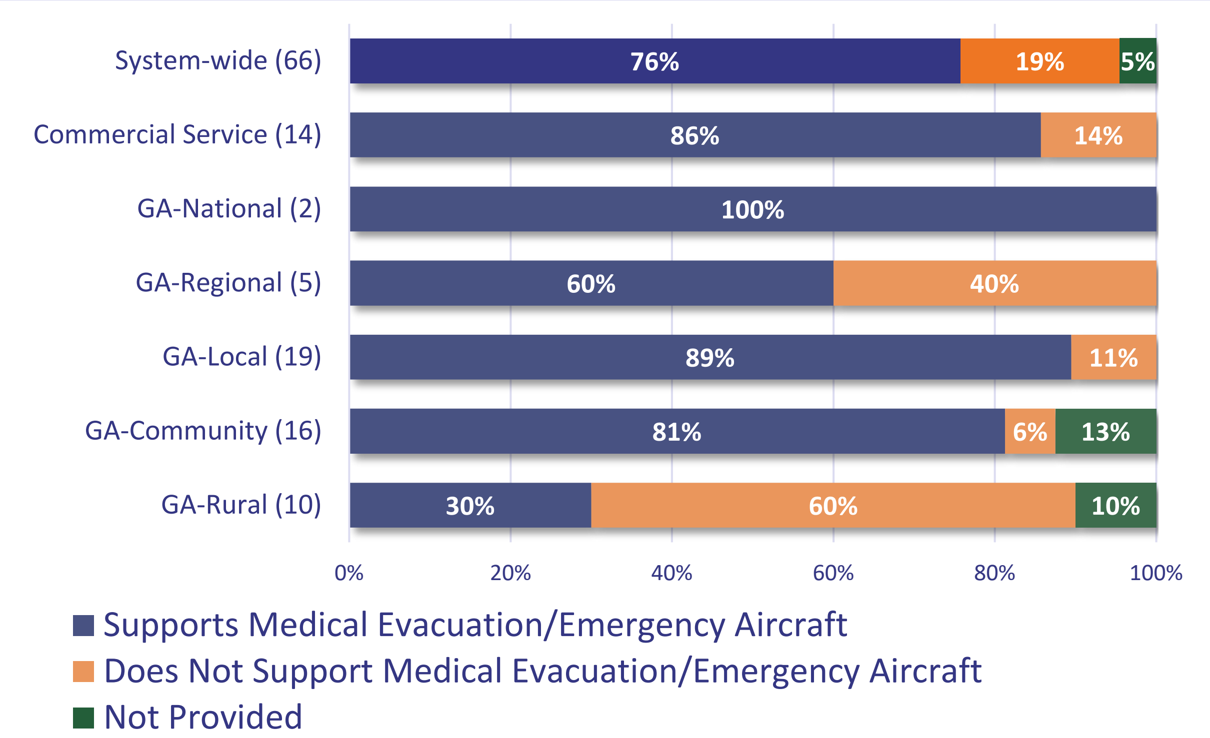
Source: 2018 Inventory & Data Form

6.2.2.7. Percent of Airports that Support Medical/Emergency Evacuation Aircraft

In addition to supporting firefighting operations, airports which support other medical emergency and evacuation aircraft are critical to rapid delivery of life-saving emergency responders and supplies during situations where time is essential. Specialized aircraft are used to transport personnel to administer emergency medical services, perform patient transfers to medical facilities, and evacuate individuals from areas not easily accessible by ground transportation. The availability of airports that support these types of aviation activities is crucial to connecting patients and medical providers especially in rural communities where sufficient medical facilities may not exist nearby.

Airports were asked during the inventory process if their airport accommodated these types of operations. As a result, 76 percent of airports system-wide reported supporting medical/emergency evacuation aircraft at their airports. Except for GA-Rural airports, all airport classifications report 60 percent or more of their airports support these types of aircraft. All GA-National airports report accommodating medical/emergency evacuation aircraft. GA-Rural airports reported that 30 percent of their airports support these types of aircraft. **Figure 6.14** shows the results of the survey related to support of medical/emergency evacuation aircraft.

Figure 6.14. Percent of Airports by Classification that Support Medical/Emergency Evacuation Aircraft



Source: 2018 Inventory & Data Form

Americans living in rural communities rely on the local hospital as their principal source of medical care. However, there is a shortage of qualified physicians in rural areas across the country. Rural Partners in Medicine (RPM), based at Rocky Mountain Metropolitan (BJC), has sought to address these shortages by sending specialty surgeons to rural hospitals in Colorado, Nebraska, Wyoming, Missouri, Kansas, Arizona, Nevada, and South Dakota. RPM has partnered with 30 hospitals in the Mountain Region and charters approximately 55 flights per month, making it possible for rural residents to obtain elective surgeries in the community without having to travel to a major city.

6.3. Goal: Access and Mobility

Access and Mobility

The access and mobility goal is aimed at ensuring Colorado's airport users are able to adequately access the vast range of facilities and services that airports provide. Access ensures that the widest range of users can utilize airport facilities and services at their convenience. Access is especially important during inclement weather which could result in emergency landings or in situations pertaining to emergency response/transportation. Mobility dictates the level of ease in which people can travel to all areas of the state. Airports strengthen Colorado's multi-modal transportation system by acting as points of integration between modes. This integration provides additional services, enhances mobility, and enables travelers to journey beyond the airport's immediate vicinity with greater ease. This goal measures the system's accessibility and mobility by studying its infrastructure, services, and potential reach to the surrounding areas.

6.3.1. Performance Measures

This section discusses the results of the PMs associated with the access and mobility goal category. PMs for this category include the following:

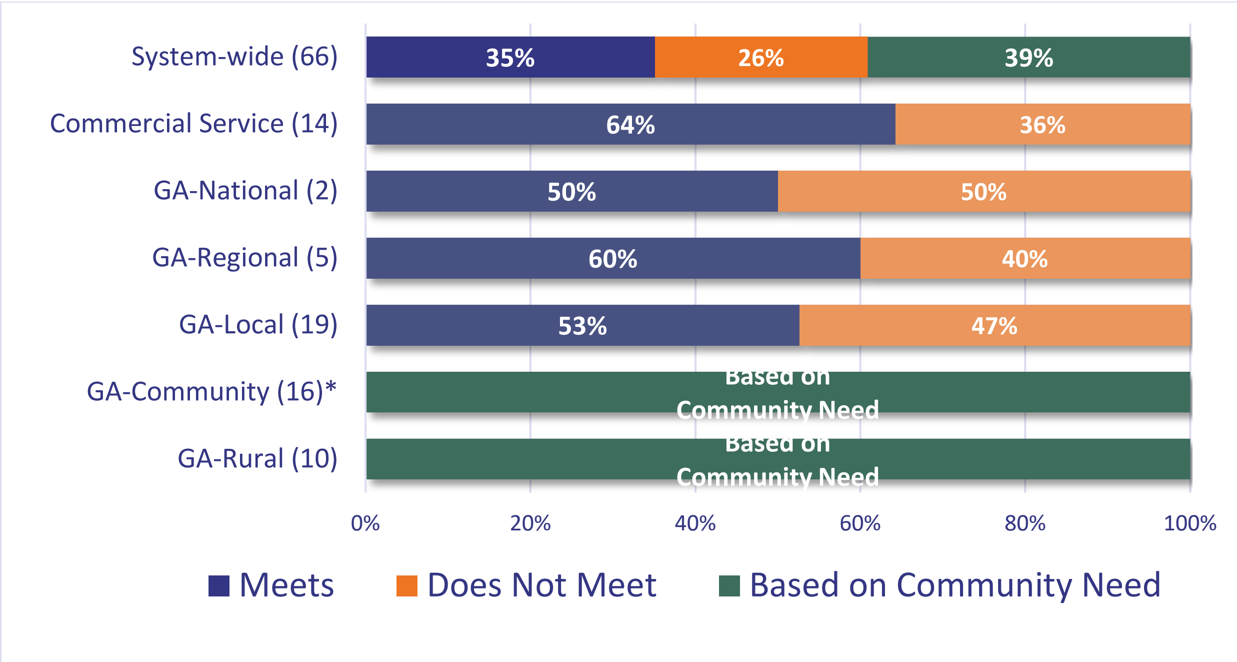
1. Percent of airports with a dedicated Snow Removal Equipment (SRE) building
2. Percent of population within a 30-minute drive time of an all-weather runway
3. Percent of airports with adequate terminal capacity
4. Percent of airports with adequate transient hangar spaces

6.3.1.1. Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building

Colorado's diverse natural environments and elevations lend to its array of unique climates. Due to this, Colorado airports experience a wide range of weather conditions including heavy snowfall during the winter months. Many Colorado airports accommodate access to world-renowned ski resorts and winter sports attractions. As such, SRE is vital to uninterrupted operations during "less than ideal" winter flying conditions. SRE is critical to keeping hazardous snow, ice and slush from accumulating on airfield surfaces. Providing a dedicated SRE maintenance and storage building ensures that the equipment is always at optimal operational status and prolongs equipment life. SRE equipment that is in optimal condition is essential to keeping airside facilities safe for aircraft movement and activity during the winter months. For this PM, having performance was evaluated consistent with CASP facility and service objectives. Commercial Service, GA-National, GA-Regional, and GA-Local airports objectives are to have a dedicated SRE building. GA-Community and GA-Rural airport objectives for having a dedicated SRE building is based on community need.

Airports were asked if they had a dedicated SRE building. Approximately 35 percent of airports system-wide reported having a dedicated SRE building. Commercial Service, GA-National, GA-Regional, and GA-Local airports have 50 percent or more of airports with a dedicated SRE building. **Figure 6.15** displays the percent of airports by classification that have a dedicated SRE building.

Figure 6.15. Percent of Airports by Classification that have a Dedicated SRE Building



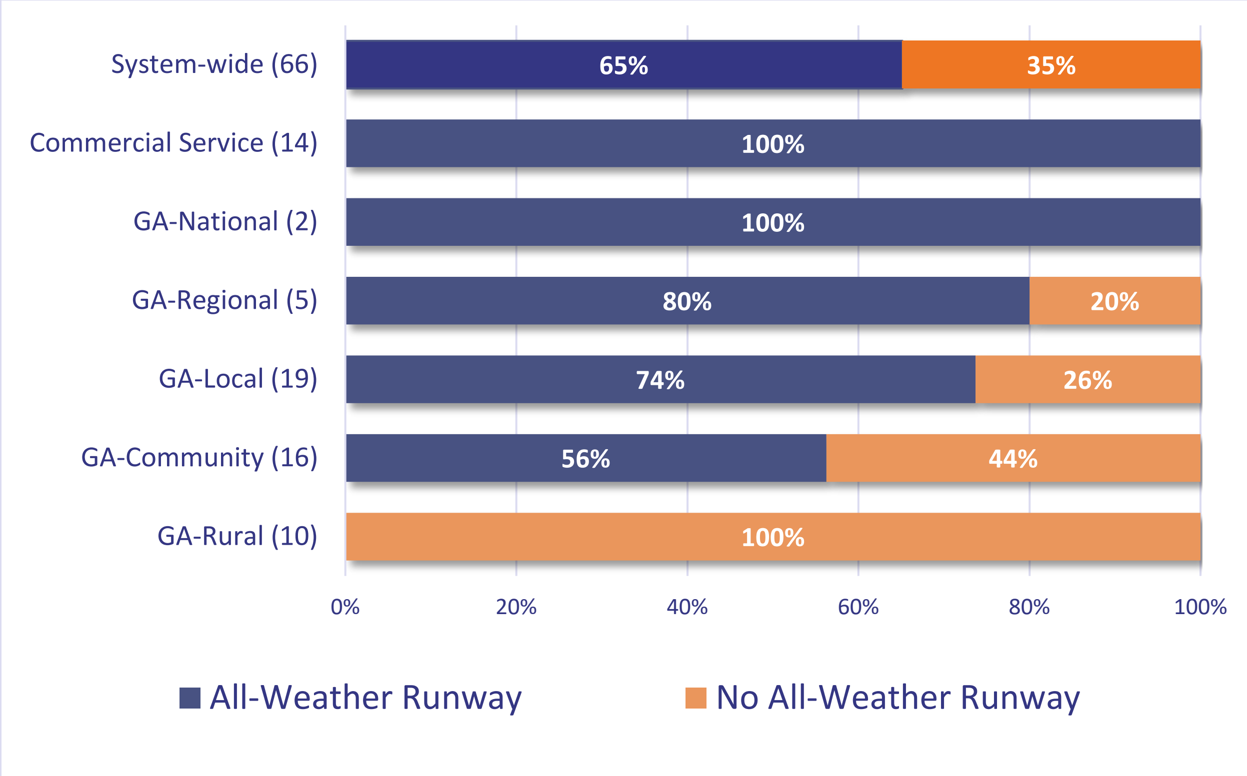
**Note: Six GA-Community airports have dedicated SRE buildings and are reflected in the system-wide analysis.*
Source: 2018 Inventory & Data Form

6.3.1.2. Percent of Population Within a 30-Minute Drive Time of an All-Weather Runway

As noted previously, Colorado experiences a wide range of weather activity which requires airports to accommodate these conditions. The presence of an all-weather runway is often a critical need during emergency response situations during times in which weather negatively impacts access and mobility of alternate transportation modes during the winter months. A runway optimized for these types of conditions are those that are paved, have instrument approach procedures (IAP), and have a weather reporting system present. An all-weather runway increases the operational capacity at airports allowing aircraft to operate during inclement weather.

Based on FAA-sourced material, 65 percent of airports system-wide meet the three elements identified for an all-weather runway. All Commercial Service and GA-National airports have all-weather runways. Eighty percent of GA-Regional, 74 percent of GA-Local, and 56 percent of GA-Community airports support all-weather runways, while none of the GA-Rural airports have the three elements of an all-weather runway. **Figure 6.16** presents the performance of the system and airports by classification that meet the all-weather runway criteria.

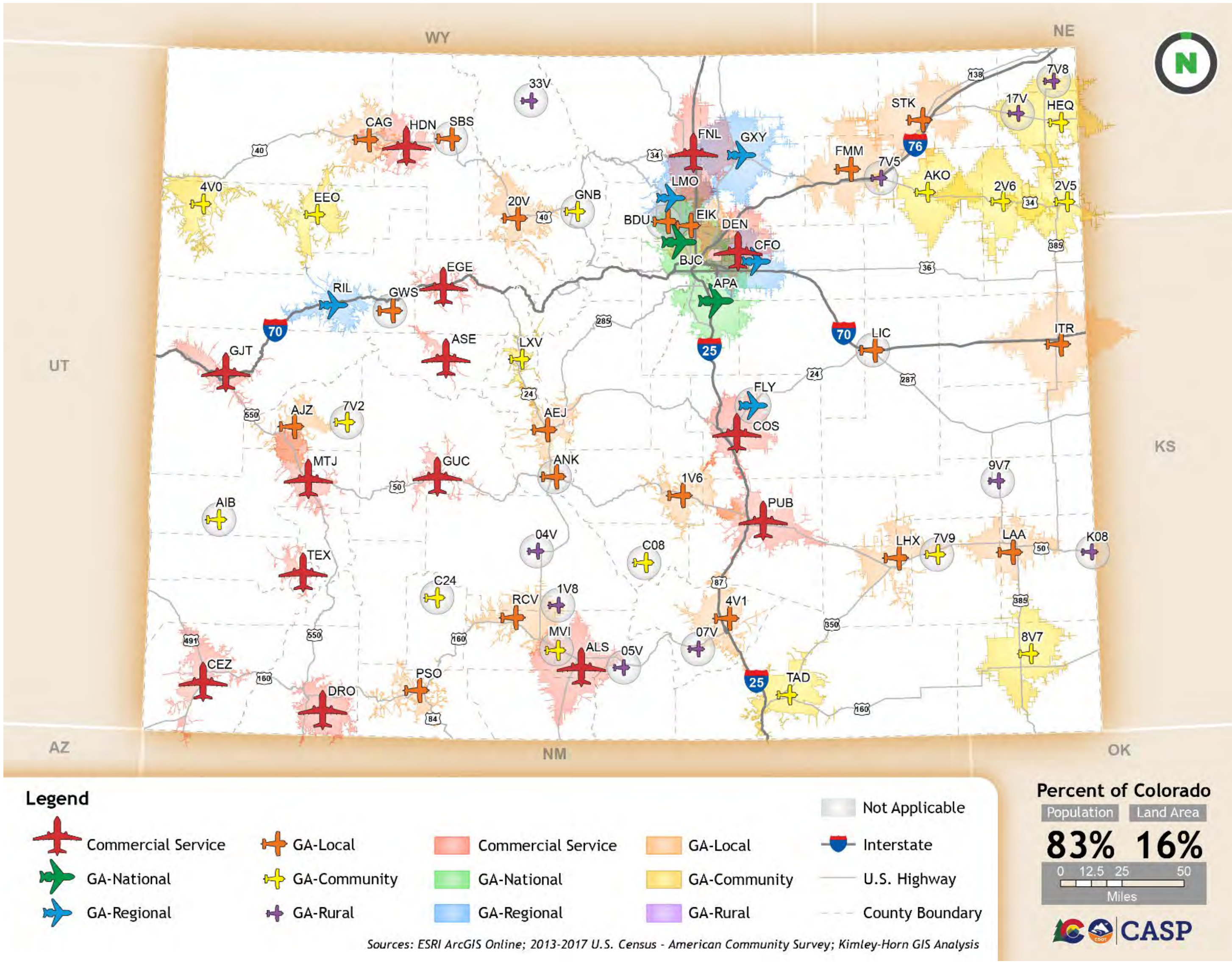
Figure 6.16. Percent of Airports by Classification that have an All-Weather Runway



Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

Airports are integral gateways for connecting people to all areas of the state. To understand the impact that these airports have on access and mobility in Colorado, the percent of Colorado's population and land area that were within a 30-minute drive time of an airport with an all-weather runway were analyzed in Geographic Information Systems (GIS). As shown in **Figure 6.17**, 83 percent of Colorado's population and 16 percent of the state's land area are within a 30-minute drive of an airport that has an all-weather runway.

Figure 6.17. 30-Minute Drive Time of an Airport with an All-Weather Runway



6.3.1.3. Percent of Airports with Adequate Terminal Capacity

A two-part high-level analysis of terminal and airfield capacities was conducted to gauge the airports' alignment to this PM. The two metrics are so closely related that factors influencing changes in one capacity will directly impact the other. For example, airfield improvements introducing additional operations and enplanements to an airport will affect the terminal's ability to serve more passengers. The following sections expand upon the existing terminal and airfield capacity conditions system-wide.

Commercial Service Terminals

Passenger terminals at commercial service airports are evaluated using a gross terminal size methodology derived from ACRP Report 25. ACRP Report 25 provides a high-level methodology that determines the gross terminal size of an airport dependent on the commercial service airport's terminal type and the number of narrowbody equivalent gates (NBEGs). **Table 6.3** shows the square footage per NBEG sizes included in ACRP Report 25.

Table 6.3. Terminal Sizes Per NBEG by Airport Classification

Airport Terminal	Square Feet/NBEG
Smaller Domestic	15,000 – 18,000
Larger Domestic	18,000 – 24,000
International	28,000 – 40,000

Source: ACRP Report 25, 2010

For the 2020 CASP, the number of gates for each airport was determined through the airport-reported responses to the 2018 Inventory & Data Form and terminal types were substantiated based on hub size. Small hubs were viewed as "Larger Domestic" and nonhub and nonprimary airports were considered "Smaller Domestic." These inputs were used to calculate the minimum gross terminal area size requirements for each airport. Existing passenger terminal buildings were compared to the calculated size requirements to determine if the airport was meeting the PM. As an additional indicator of terminal performance, airports' responses to terminal space deficiencies or delays were considered in the analysis. **Table 6.4** summarizes the terminal capacities for commercial service airports in the CASP.

Table 6.4. Terminal Size Requirements for Commercial Service Airports

Associated City	Airport Name	FAA ID	Airport Designation	Number of Gates	Minimum Terminal Size Requirement (sq. ft.)	Existing Terminal Building (sq ft.)	Meets Terminal Size Requirements	Airport Reports Delays Due to Insufficient Terminal Space
Alamosa	San Luis Valley Regional	ALS	Smaller Domestic	1	15,000	8,400	No	No
Aspen	Aspen-Pitkin County	ASE	Larger Domestic	8	144,000	45,000	No	Yes
Colorado Springs	Colorado Springs Municipal	COS	Larger Domestic	12	216,000	294,495	Yes	No
Cortez	Cortez Municipal	CEZ	Smaller Domestic	1	15,000	3,500	No	No
Denver	Denver International	DEN	International	136	3,808,000	7,496,972	Yes	No
Durango	Durango-La Plata County	DRO	Larger Domestic	3	54,000	37,617	No	Yes
Eagle	Eagle County Regional	EGE	Larger Domestic	6	108,000	120,000	Yes	No
Fort Collins/ Loveland	Northern Colorado Regional	FNL	Smaller Domestic	1	15,000	4,020	No	Yes
Grand Junction	Grand Junction Regional	GJT	Larger Domestic	6	108,000	76,000	No	No
Gunnison	Gunnison-Crested Butte Regional	GUC	Larger Domestic	3	54,000	34,800	No	No
Hayden	Yampa Valley	HDN	Larger Domestic	6	108,000	71,695	No	No
Montrose	Montrose Regional	MTJ	Larger Domestic	4	72,000	35,000	No	Yes
Pueblo	Pueblo Memorial	PUB	Smaller Domestic	2	30,000	23,531	No	Yes
Telluride	Telluride Regional	TEX	Smaller Domestic	1	15,000	20,000	Yes	No

Sources: 2018 Inventory & Data Form; ACRP Report 25; 2010; Kimley-Horn, 2019

Of the 14 commercial service airports, four had existing terminal buildings that met the minimum gross terminal sizes calculated for their airport. Five airports reported experiencing delays or other deficiencies due to insufficient terminal space for passengers.

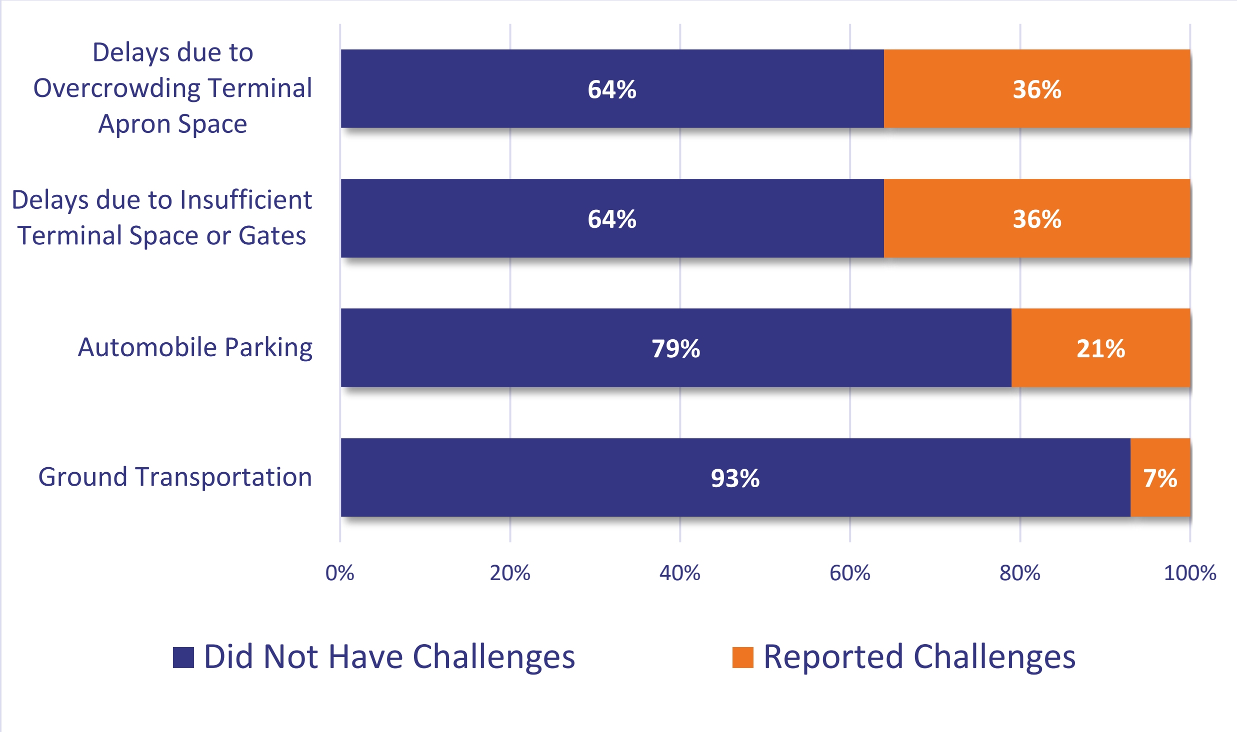
Some of the limitations to this method is that it takes a high-level view of the terminal in its entirety and does not address specific challenges airports may face in terms of space configuration and facility management. For example, an airport may have adequate terminal size, but still experiences heavy delays from lack of adequate facilities or inefficient terminal configurations, especially during peak periods when there are many aircraft on the ground. During this period there are both deplaning passengers and enplaning passengers in the terminal. In Colorado there are also airports that only have a limited number of gates, however, the planes are on the terminal ramp and a single gate may be used to serve multiple aircraft at one time.

To identify some of these factors affecting the adequacy of terminal space, commercial airports were asked to report insufficiencies with their terminal experiences regarding the following areas:

- Ground Transportation
- Automobile Parking
- Delays or Constraints due to Insufficient Terminal Space or Gates
- Delays or Constraints due to Overcrowding Terminal Apron Space

It should be noted that delays due to insufficient terminal space or gates relates to areas used by passengers such as hold rooms, ticketing/check-in, security, bag claim and other related terminal facilities. Delays due to overcrowding terminal apron space are issues associated with insufficient terminal apron space for aircraft. **Figure 6.18** displays the percent of commercial service airports reporting challenges in the above areas. Delays due to overcrowding and insufficient terminal space are the highest reported challenges and affect 36 percent of Commercial Service airports. Automobile parking challenges were reported by 21 percent of airports and ground transportation by seven percent. It should be noted that weather and short staffing of airlines, as well as other factors, can cause delays at airports; however, this level of analysis was not conducted as part of the 2020 CASP.

Figure 6.18. Challenges at Commercial Service Passenger Terminals



Source: 2018 Inventory & Data Form

The highest reported challenges were derived from overcrowding and insufficient space in passenger and terminal apron areas. Much of the qualitative data collected from these airports listed increased flights, aircraft and passenger congestion, and insufficient room to expand as key factors affecting terminals. These types of terminal capacity challenges may be an indicator of growing aviation demand at commercial service airport. It is important to consider these challenges as airports seek to improve airside facilities to support growing aviation demand.

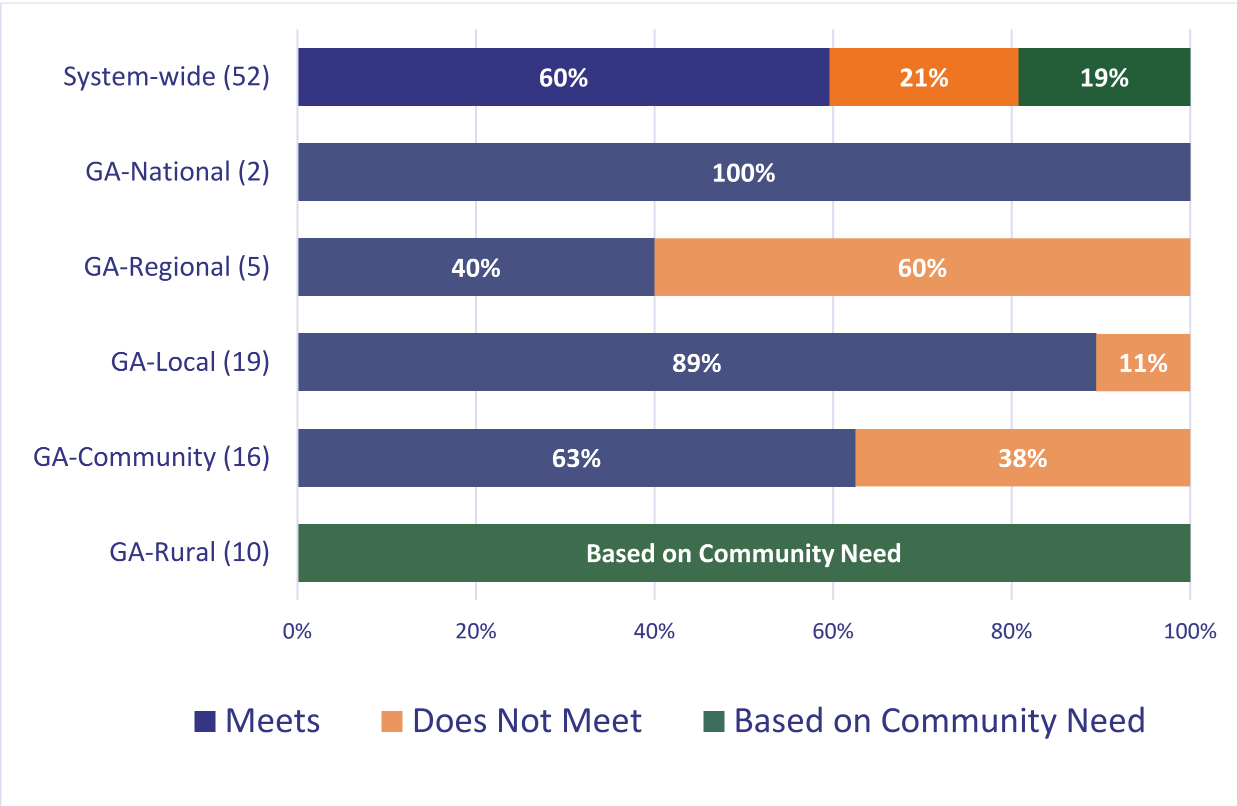
It should be noted that due to the nature of this methodology, individual airports' terminal capacity analyses more accurately determine the facilities, services, and other improvements appropriate to their passenger terminal facilities. Individual airport terminal analyses can be used to determine potential improvements to specific areas of the terminal such as: check-in/ticketing areas, security/passport control, hold rooms, circulation areas, baggage claim, etc. The methodology used in the CASP is very high-level, measuring the airports' abilities to meet one overall size metric to gauge their performance in meeting the PM. This analysis does not analyze key factors such as space configuration, services provided, average wait times, and other indicators unique to each airport in adequately meeting the needs of its users.

GA Terminals

GA terminals were analyzed based on their facility and service objective which evaluated the ratio of GA terminal square footage to peak hour passengers (GA-National airports) and available amenities to the GA airport user (GA-Regional, GA-Local, and GA-Community airports). The following analysis provides more information related to the ratio of GA terminal building square footage to the number of peak hour passengers. Amenities that were evaluated include restrooms, flight planning space/rest area, and Wi-Fi availability. Commercial Service airports were not evaluated as they do not have a GA terminal objective. GA-Rural airports do not have a specific terminal objective, but their development should coincide with community needs.

Figure 6.19 presents GA terminal objective performance. System-wide, 60 percent of GA airports have adequate terminal buildings. GA-Local airports make up the largest group of airports with adequate GA terminal buildings. Sixty percent of GA-Regional airports have inadequate terminal buildings.

Figure 6.19. Percent of GA Airports with Adequate GA Terminal Buildings



Sources: 2018 Inventory & Data Form; Various Individual Colorado Airport Master Plans

GA terminal capacities were also examined as an additional analysis. For the 2020 CASP, GA terminal capacities were calculated using terminal size guidelines outlined in the ACRP Report 113. This method takes the number of peak hour operations and multiplies it by 2.5. This number (2.5) signifies an assumed number of airport users (pilots and passengers) that are the result of each peak hour operation. Once the number of peak hour passengers is calculated, it is multiplied by the minimum square feet per person. The ACRP report states adequate terminal size is between 100 square feet - 150 square feet of space per person during the peak hour. One hundred fifty square feet of space per person is the most widely-used metric to determine terminal capacity size guidelines for GA facilities. The formula is shown in the example below:

Example:

Peak Hour Operations: 25

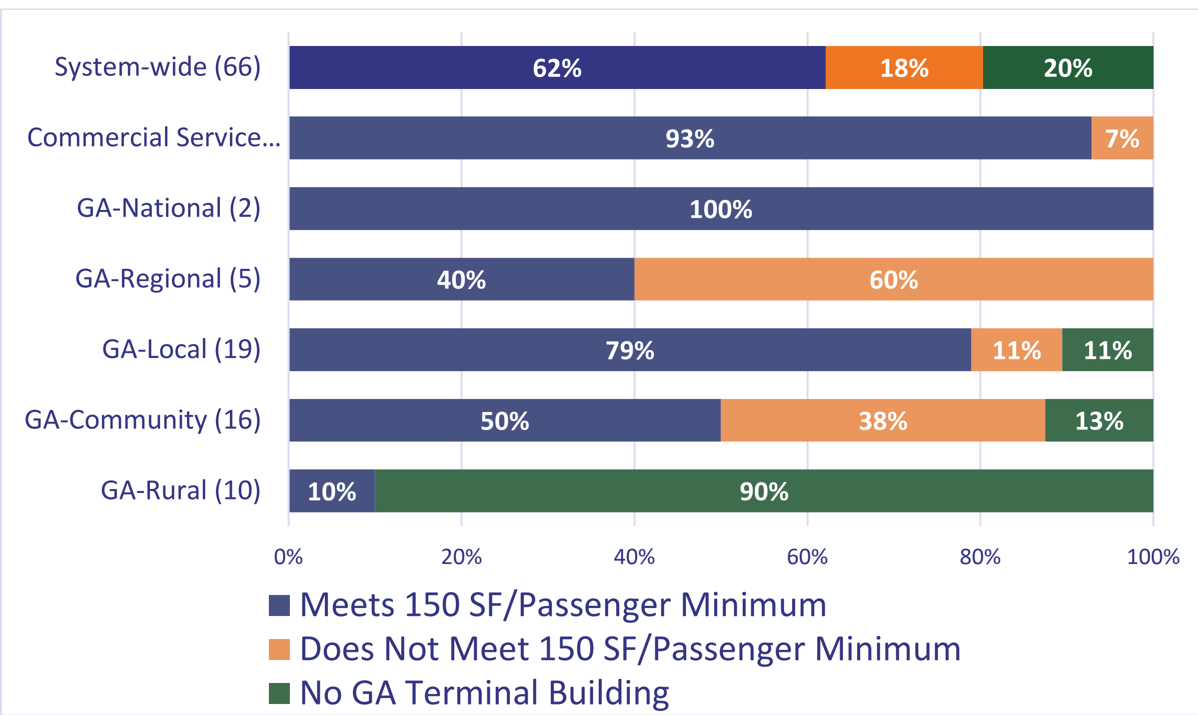
GA Terminal Size = 25 peak hour operations x 2.5 airport users x 150 SF

GA Terminal Size Total Need = 9,375 square feet

Existing GA terminal building sizes, if applicable, were compared to the calculated GA terminal building size needs to determine if it adequately met the ACRP Report 113 size recommendations.

System-wide, 58 percent of GA terminal buildings met the square foot size guidelines established based on guidance from ACRP Report 113. Eighteen percent of GA airport terminal buildings do not meet the size recommendations and 24 percent currently do not have a terminal building. GA–Rural airports are the largest percent of airports that do not have a GA terminal building with 90 percent not providing this facility. GA–Regional airports have the highest percentage of airports with terminal building sizes that are below the ACRP Report 113 size guidelines at 60 percent. Both GA–National airport terminal buildings meet or exceed terminal size recommendations. Seventy-nine percent of GA–Local airports meet the GA terminal building size guidelines. **Figure 6.20** shows the percent of airports by classification that meet the sizing recommendations calculated through the ACRP Report 113 methodology.

Figure 6.20. Percent of Airports by Classification with GA Terminals Meeting Size Guidelines



Sources: ACRP Report 113; 2018 Inventory & Data Form; Kimley-Horn, 2019

According to ACRP Report 113, airports should ensure that in planning a GA terminal building that it first meets the needs of the airport and fits within the project budget. This may serve as an explanation to the high percentage of GA–Rural airports not having an existing GA terminal building.

The infrequency and minimal number of daily and annual operations may not justify the provision and maintenance of a terminal building at these smaller airports. Similar to the limitations associated with Commercial Service terminal buildings, this high-level analysis does not take into account specific challenges unique to each airport's demands. For this reason, facility and service objectives for terminal buildings were established and chosen as the preferred metric for evaluating terminal facilities at the statewide level.

Airfield Capacities

An examination of airfield capacities was conducted as a supplemental analysis of the Access and Mobility PM, "Percent of Airports with Adequate Terminal Capacity". Determining airfield capacity allows each airport to understand how its physical design can sufficiently serve current and projected aviation activity. The main objective of this analysis is to determine the annual service volume (ASV) for each CASP airport. ASVs represent a high-level measure of how many operations an airport can support in a single year. The FAA recommends that airports begin planning additional airfield facilities once annual total operations exceed 60 percent of an airport's calculated ASV. Once the ratio of annual total operations exceeds 80 percent, FAA recommends that measures to address capacity should be in place.

Methodology

ACRP Report 79: *Evaluating Airfield Capacity* outlines different techniques to calculate an airport's ASV dependent on the available informational inputs, resources, and appropriate program. In comparison, the FAA's AC 150/5060-5, Airport Capacity and Delay (issued in 1983) provides a standardized ASV output dependent on runway configuration and the airport's fleet mix index. For the purpose of the CASP, the use of the ACRP Prototype Airfield Capacity Spreadsheet Model developed as part of Report 79 was deemed as the most appropriate methodology to define the ASV for airports in Colorado's aviation system.

The data considerations, methodologies, and inputs utilized to calculate each airport's ASV are described in this section.

Existing Airfield Capacity Data

The initial phase of determining airfield capacity was to research and extract any existing airfield capacity data from each airport's master plan, where available. Once this data was collected, three factors were used to gauge which airports with existing airfield capacity data would need to have their capacities recalculated:

- Airport has a full parallel runway
- Airport has a precision approach
- Airport has existing ASV data from the master plan

For airports who met all three of the following criteria, the airport master plan ASV was used for the 2020 CASP. The 13 airports meeting the above criteria and for which master plan data were used are shown in **Table 6.5**.

Table 6.5. Airports Whose Master Plan Airfield Capacities Were Utilized

	Airport Information	
Associated City	Airport Name	FAA ID
Colorado Springs	Colorado Springs Municipal	COS
Colorado Springs	Meadow Lake	FLY
Denver	Centennial	APA
Denver	Denver International	DEN
Denver	Rocky Mountain Metropolitan	BJC
Denver	Colorado Air and Space Port	CFO
Durango	Durango-La Plata County	DRO
Granby	Granby-Grand County	GNB
Grand Junction	Grand Junction Regional	GJT
Greeley	Greeley-Weld County	GXY
Longmont	Vance Brand	LMO
Montrose	Montrose Regional	MTJ
Rifle	Rifle Garfield County	RIL

Source: Airport master plans

Airfield capacity calculations were calculated for the remaining 53 airports.

Prototype Airfield Capacity Spreadsheet Model

Per ACRP Report 79: *Evaluating Airfield Capacity*, the Prototype Airfield Capacity Spreadsheet Model provides the ability to calculate the ASV and hourly operations that an airport can handle in Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC) using different inputs unique to the individual airport. The data was analyzed to determine the number of operations that the airport can facilitate based on its operational fleet mix, the amount of touch and go operations that occur, the percent of the year the airport is affected by VMC, etc.

Inputs & Assumptions

The minimal inputs needed to estimate individual airport ASVs are listed in **Table 6.6**. These data points were collected for CASP airports included in the airfield capacity analysis.

Table 6.6. Spreadsheet Modeling Inputs

Input	Description of Input	Source of Information
Percent of VMC Conditions	The percent of the year that an airport will experience VMC conditions	Airport Master Plans, or ALPs when available
Percent of Touch and Go's	The percent of total operations that are comprised of Touch and Go's	2018 Inventory & Data Form
Operational Fleet Mix Percentages	The airport's current operational fleet mix percentages arranged into seven different categories based on each aircraft's Maximum Gross Takeoff Weight (MTOW)	2018 Inventory & Data Form
Runway Conditions	The number of existing runway exits OR the availability of a full parallel taxiway	2018 Inventory & Data Form
Air Traffic Control Tower	The existence of an air traffic control tower	2018 Inventory & Data Form
Airport Runway Configuration	The layout of the airport's runway(s)	Google Earth

Sources: ACRP Report 79: Prototype Airfield Capacity Spreadsheet Model User's Guide, 2012; Kimley-Horn, 2019

Some assumptions were made to gauge how inputs should be measured for each airport that did not have this information readily available through research or previous analyses. Assumptions were necessary to obtain the minimal data needed to calculate the ASV. Those assumptions included:

- **Percent of VMC Conditions –** If the airport did not have VMC data available, data for the nearest airport with VMC data was used.
- **Percent of Touch and Go's –** If the airport did not have existing touch-and-go data available, then the following inputs were assumed based on information provided in the 2018 Inventory & Data Form:
    - If the airport had flight training and military operations: 15% was applied
    - If the airport had flight training: 10% was applied
    - If the airport had military operations: 5% was applied
    - If the airport did not have flight training or military operations: 0% was applied

Limitations

The analysis includes a substantial number of inputs that can be customized to fit the airport's unique conditions including departure and arrival separation distances, arrival gap spacing buffering, length of common approach, etc. Advanced inputs were not used and inputs outside of the necessary inputs listed in **Table 6.6** were left as the default allocation. The default inputs assume generic factors affect the airport and are not reflective of those specific conditions affecting the airport. The assumptions made for VMC percentages and touch-and-go percentages may also differ from the actual conditions at the airports and should be taken into consideration. Airports are recommended to complete their own airfield capacity analyses to gain the most accurate representation of ASV or even more detailed hourly capacity analyses.

Findings

ASVs serve as important metrics to gain insights into addressing current or future airport capacity needs. The resulting existing ASV calculations show that Colorado's system-wide airfield capacity is well-maintained and can adequately accommodate current and future operational growth when viewed as a whole system. **Table 6.7** displays the calculated ASVs for all CASP airports except DEN.

Table 6.7. Airfield Capacity

Airport Name	Airport Name	FAA ID	Annual Service Volume (ASV)	CASP 2018 Baseline Operations	Percent of ASV
Akron	Colorado Plains Regional	AKO	130,100	20,500	15.8%
Alamosa	San Luis Valley Regional	ALS	156,400	5,718	3.7%
Aspen	Aspen-Pitkin County	ASE	151,000	42,222	28.0%
Blanca	Blanca	05V	74,400	1,000	1.3%
Boulder	Boulder Municipal	BDU	152,600	51,358	33.7%
Brush	Brush Municipal	7V5	74,400	1,461	2.0%
Buena Vista	Central Colorado Regional	AEJ	145,100	10,000	6.9%
Burlington	Kit Carson County	ITR	137,200	8,000	5.8%
Canon City	Fremont County	1V6	138,300	13,778	10.0%
Center	Leach	1V8	74,400	833	1.1%
Colorado Springs	Colorado Springs Municipal	COS	340,000	137,273	40.4%
Colorado Springs	Meadow Lake	FLY	230,000	65,814	28.6%
Cortez	Cortez Municipal	CEZ	154,000	9,834	6.4%
Craig	Craig-Moffat	CAG	137,700	12,000	8.7%
Creede	Mineral County Memorial	C24	77,100	1,439	1.9%
Del Norte	Astronaut Kent Rominger	RCV	122,200	5,745	4.5%
Delta	Blake Field	AJZ	139,600	2,910	2.1%
Denver	Centennial	APA	525,000	340,721	64.9%
Denver	Denver International	DEN	730,500	594,522	81.4%
Denver	Rocky Mountain Metropolitan	BJC	285,000	171,262	60.1%
Denver	Colorado Air and Space Port	CFO	270,000	79,704	29.5%
Durango	Durango-La Plata County	DRO	195,000	30,190	15.5%
Eads	Eads Municipal	9V7	74,400	728	1.0%

Airport Name	Airport Name	FAA ID	Annual Service Volume (ASV)	CASP 2018 Baseline Operations	Percent of ASV
Eagle	Eagle County Regional	EGE	166,700	40,419	24.2%
Erie	Erie Municipal	EIK	141,500	52,000	36.7%
Fort Collins/Loveland	Northern Colorado Regional	FNL	170,700	96,008	56.2%
Fort Morgan	Fort Morgan Municipal	FMM	118,700	10,000	8.4%
Glenwood Springs	Glenwood Springs Municipal	GWS	87,900	22,020	25.1%
Granby	Granby-Grand County	GNB	230,000	2,600	1.1%
Grand Junction	Grand Junction Regional	GJT	200,000	46,317	23.2%
Greeley	Greeley-Weld County	GXY	260,000	123,721	47.6%
Gunnison	Gunnison-Crested Butte Regional	GUC	122,000	6,929	5.7%
Haxtun	Haxtun Municipal	17V	117,300	90	0.1%
Hayden	Yampa Valley	HDN	140,300	14,323	10.2%
Holly	Holly	K08	87,900	1,085	1.2%
Holyoke	Holyoke	HEQ	139,600	8,500	6.1%
Julesburg	Julesburg Municipal	7V8	89,000	312	0.4%
Kremmling	Mc Elroy Airfield	20V	142,900	1,831	1.3%
La Junta	La Junta Municipal	LHX	97,900	9,258	9.5%
La Veta	Cuchara Valley	07V	102,500	50	0.0%
Lamar	Lamar Municipal	LAA	116,500	3,399	2.9%
Las Animas	Las Animas-Bent County	7V9	89,000	856	1.0%
Leadville	Lake County	LXV	136,900	5,000	3.7%
Limon	Limon Municipal	LIC	102,500	6,000	5.9%
Longmont	Vance Brand	LMO	230,000	72,939	31.7%
Meeker	Meeker/Coulter Field	EEO	143,000	8,070	5.6%
Monte Vista	Monte Vista Municipal	MVI	111,900	6,000	5.4%

Airport Name	Airport Name	FAA ID	Annual Service Volume (ASV)	CASP 2018 Baseline Operations	Percent of ASV
Montrose	Montrose Regional	MTJ	215,000	30,925	14.4%
Nucla	Hopkins Field	AIB	103,600	4,220	4.1%
Pagosa Springs	Stevens Field	PSO	162,000	17,053	10.5%
Paonia	North Fork Valley	7V2	89,000	2,000	2.2%
Pueblo	Pueblo Memorial	PUB	378,000	196,074	51.9%
Rangely	Rangely	4V0	153,400	47,115	30.7%
Rifle	Rifle Garfield County	RIL	210,000	14,561	6.9%
Saguache	Saguache Municipal	04V	74,400	72	0.0%
Salida	Harriet Alexander Field	ANK	90,900	4,053	4.5%
Springfield	Springfield Municipal	8V7	136,100	4,575	3.4%
Steamboat Springs	Steamboat Springs	SBS	75,900	11,112	14.6%
Sterling	Sterling Municipal	STK	138,100	2,176	1.6%
Telluride	Telluride Regional	TEX	137,700	9,402	6.8%
Trinidad	Perry Stokes	TAD	116,500	5,880	5.0%
Walden	Walden-Jackson County	33V	105,400	1,103	1.0%
Walsenburg	Spanish Peaks Airfield	4V1	100,500	5,000	5.0%
Westcliffe	Silver West	C08	79,000	930	1.2%
Wray	Wray Municipal	2V5	139,600	14,600	10.5%
Yuma	Yuma Municipal	2V6	104,900	5,000	4.8%

Sources: ACRP Report 79; Airport master plans; 2018 Inventory & Data Form; FAA TAF, 2018; Kimley-Horn, 2019

Three airports, Denver International (DEN), Rocky Mountain Metropolitan (BJC) and Centennial (APA), were identified as having their 2018 annual operations at or exceeding 60 percent of their ASV (as highlighted in red)[6]. Pueblo (PUB) and Northern Colorado Regional (FNL) were within 10 percent of reaching the ASV planning threshold and are highlighted in orange.

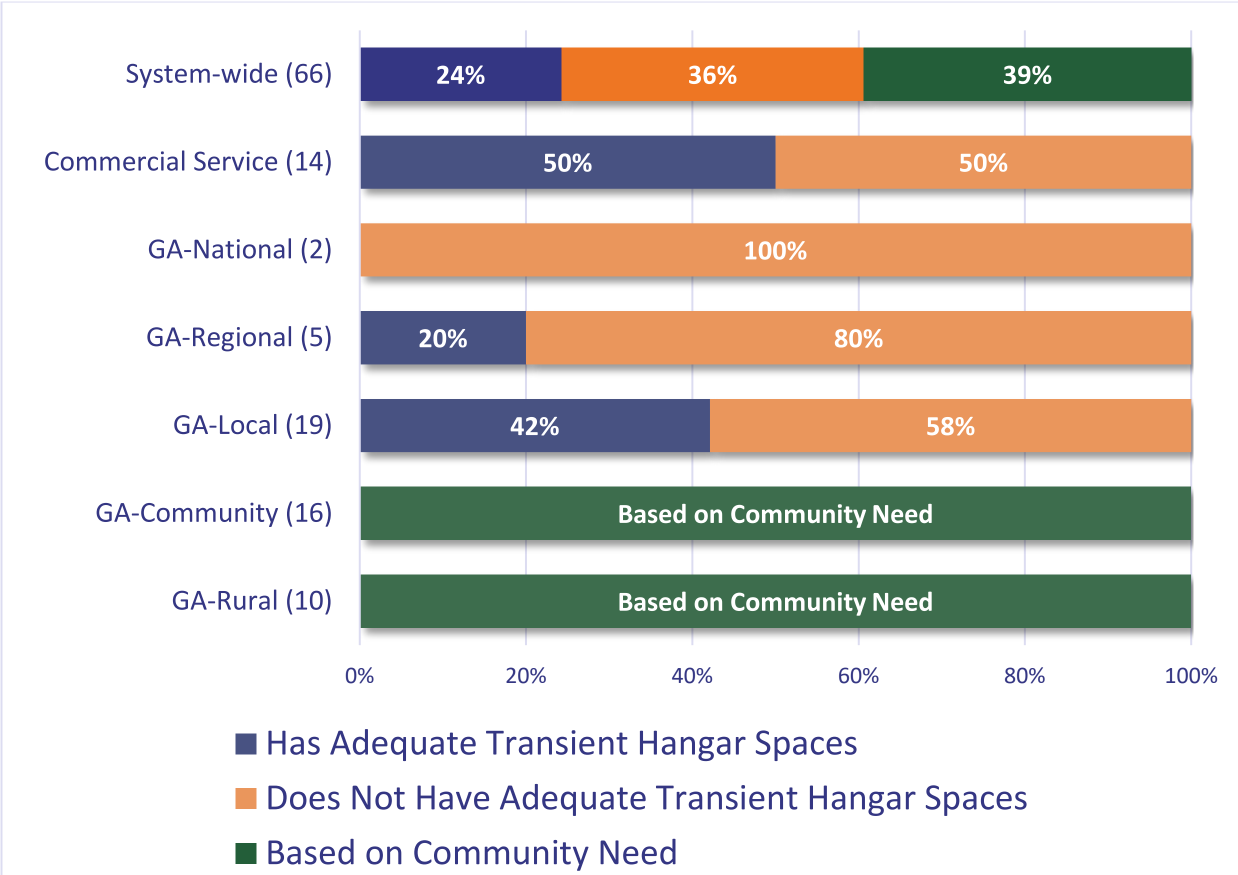
6.3.1.4. Percent of Airports with Adequate Transient Hangar Spaces

Transient hangar space offers non-local pilots and aircraft owners the ability to safely secure their aircraft overnight, especially during inclement weather or even periods of high heat. Offering enough transient hangar space on airports to accommodate this type of aviation activity establishes increased mobility and access for pilots and aircraft owners across Colorado. During the winter months, availability of adequate hangar space also provides direct cost benefits and indirect environmental benefits as it significantly reduces the need for aircraft de-icing. For this PM, adequate transient hangar space was evaluated consistent with CASP facility and service objectives. Commercial Service, GA-National, and GA-Regional airports are meeting their objective if they have enough hangars to accommodate at least 50 percent of their weekly average overnight transient storage. GA-Local airports providing 25 percent of weekly average overnight transient storage meet these objectives. GA-Community and GA-Rural airport transient hangar space objectives are based on community needs.

Twenty-four percent of system-wide airports provide adequate hangar spaces for transient aircraft based on the objectives identified for the various classifications. Fifty percent of Commercial Service airports have adequate transient hangar spaces. Both GA-National airports do not provide adequate transient space equating to zero percent meeting the objective. Twenty percent of GA-Regional airports have adequate space and 42 percent of GA-Local airports are meeting their objective. **Figure 6.21** summarizes the percentage of airports by classification that meet their designated objectives for adequate transient hangar spaces based on airport manager responses.

[6] DEN was revisiting ASV with airfield modeling simulations related to the 7th and 8th runways at the time the 2020 CASP was developed.

Figure 6.21. Percent of Airports by Classification with Adequate Transient Hangar Spaces



Sources: 2018 Inventory & Data Form; Kimley-Horn, 2019

6.3.2. System Indicators

This section discusses the results of the SIs associated with the access and mobility goal category. SIs for this category include the following:

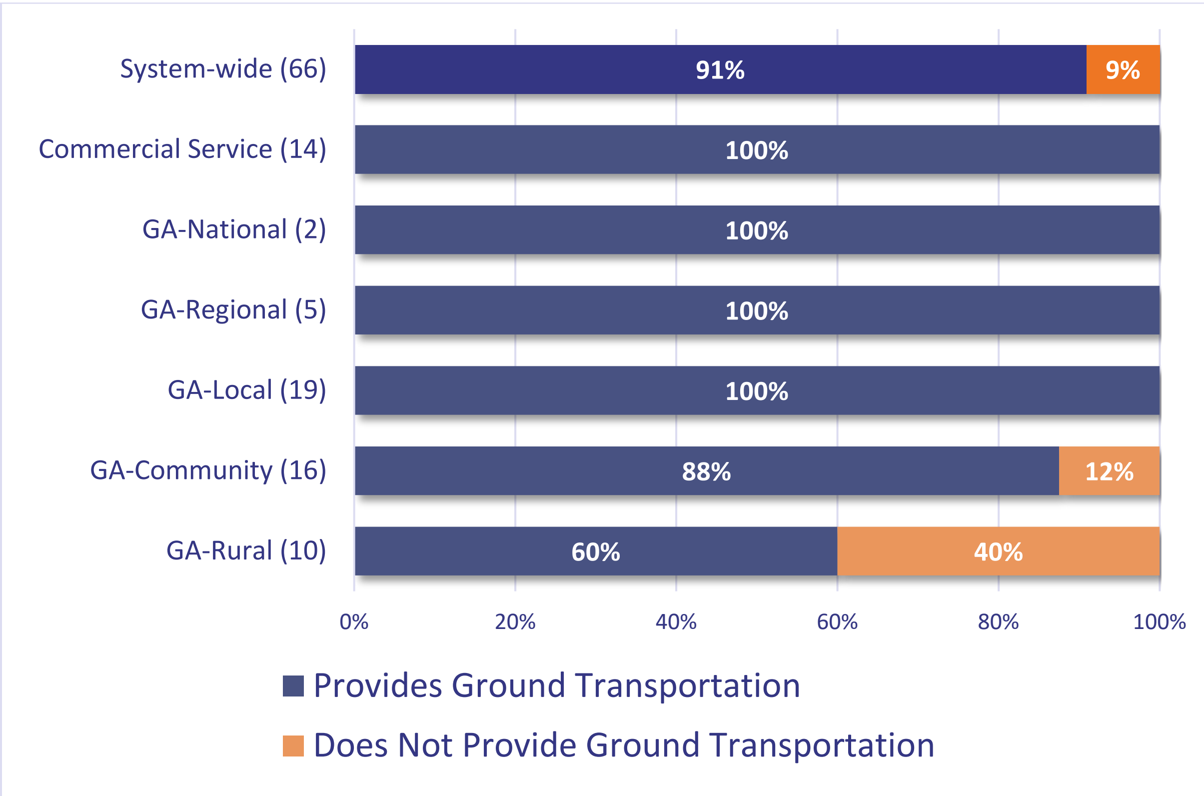
1. Percent of airports that provide ground transportation (courtesy car or other)
2. Percent of population within a 30-minute drive time of a system airport
3. Percent of airports providing access to remote and rural communities

6.3.2.1. Percent of Airports that Provide Ground Transportation (Courtesy Car or Other)

The availability of ground transportation at airports allows visitors to leave the airport to conduct their business and/or leisure actives. These services integrate airports into the multi-modal transportation system, increasing the connectivity between users and their final destinations. Ground transportation can take the form of courtesy cars, rental cars, taxis, commuter rail, Uber/Lyft, or shuttle.

Ninety-one percent of all airports system-wide reported providing some form of ground transportation to visitors at their airports. All airport classifications except for GA-Community and GA-Rural airports provide at least one ground transportation service. More detail on ground transportation at each system airport can be found in **Chapter 3. Supplemental System Context**. **Figure 6.22** presents the percent of airports by classification that provide some form of ground transportation at their airport.

Figure 6.22. Percent of Airports by Classification that Provide Ground Transportation



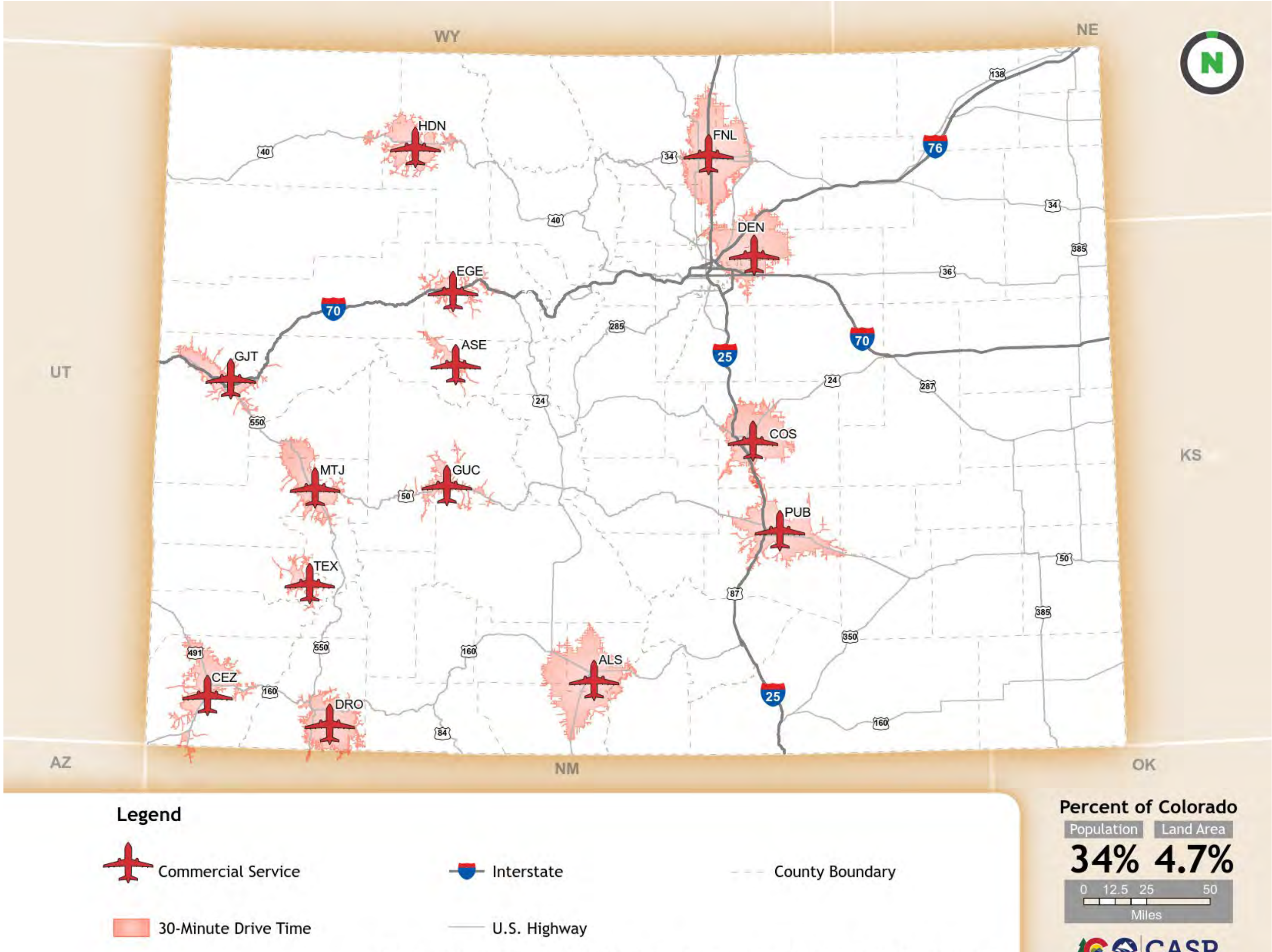
Sources: 2018 Inventory & Data Form; 2018 FAA Airport/Facility Directory (AFD)

6.3.2.2. Percent of Population Within a 30-Minute Drive Time of a System Airport

Each airport offers a unique array of facilities and services contributing to the overall strength and accessibility of the system. The airports in the six airport classifications serve different facets of the aviation industry while simultaneously acting as gateways to all parts of the state. Their individual and cumulative functions impact how well the system can serve community, regional, and state needs. This SI assesses the population's access to Colorado airports system-wide and by classification.

Figure 6.23 through **Figure 6.28** portray the percentage of Colorado's population and land area that is covered within a 30-minute drive of each airport by classification. The percentage of population and land area within these drive time buffers are only indicative of the individual classification's reach and not the cumulative area of coverage between multiple classifications. Populations and amount of land where the drive time coverage areas overlapped between airports were only counted once. In instances when an airport's drive time extended into a bordering state, only Colorado population was counted.

Figure 6.23. 30-Minute Drive Times of Commercial Service Airports



Sources: ESRI ArcGIS Online; 2013-2017 U.S. Census - American Community Survey; Kimley-Horn GIS Analysis

Figure 6.24. 30-Minute Drive Time of GA-National Airports

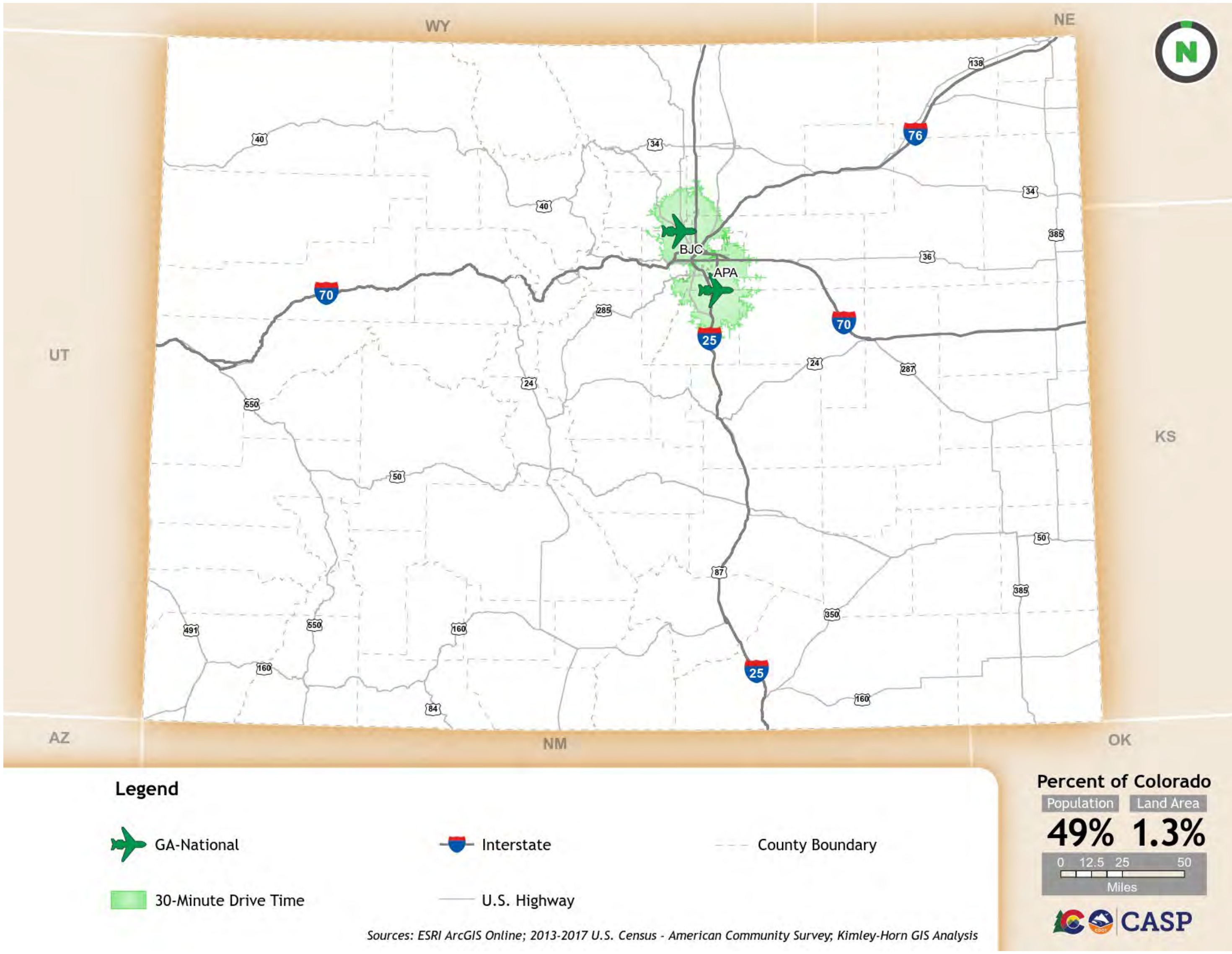


Figure 6.25. 30-Minute Drive Time of GA-Regional Airports

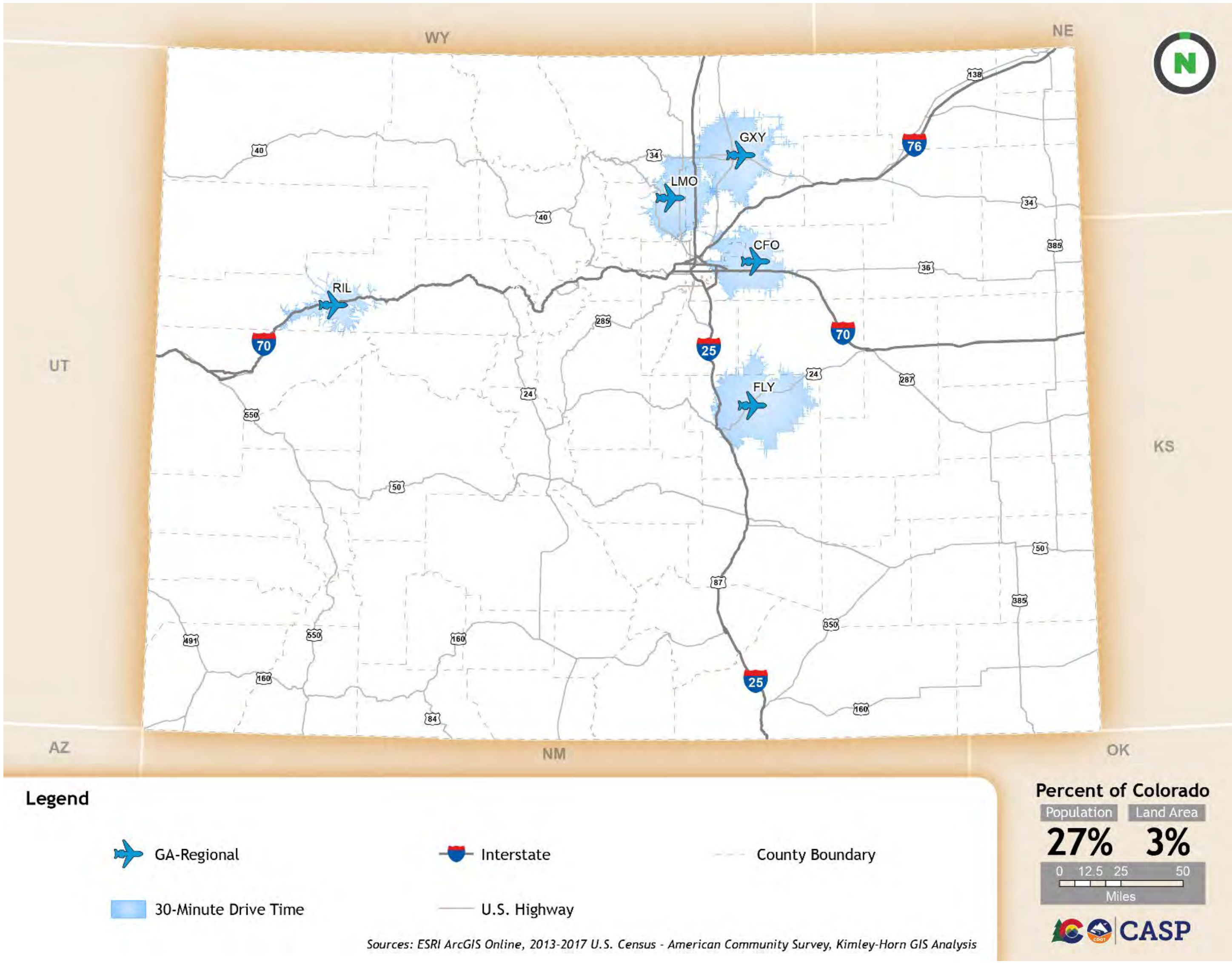


Figure 6.26. 30-Minute Drive Time of GA-Local Airports

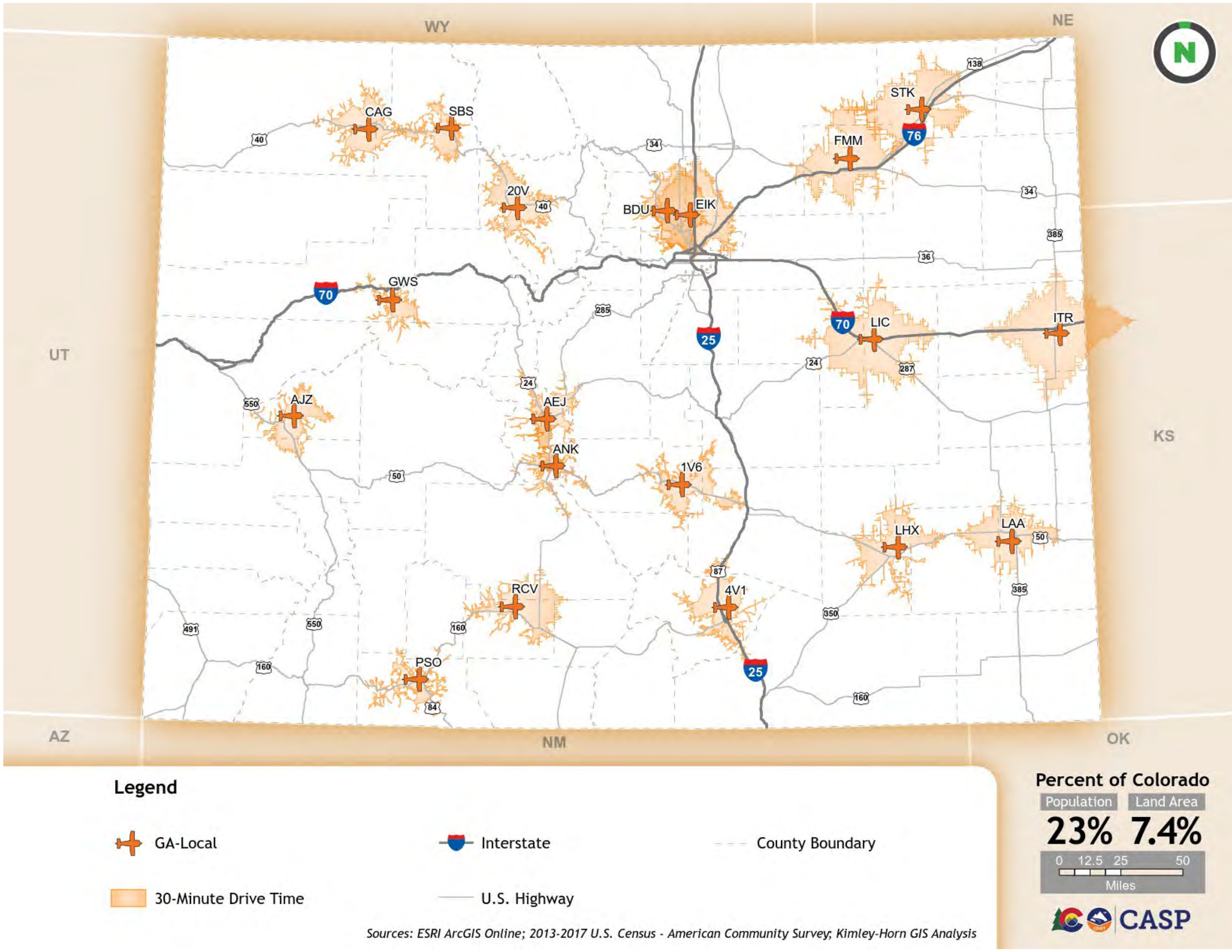


Figure 6.27. 30-Minute Drive Time of GA-Community Airports

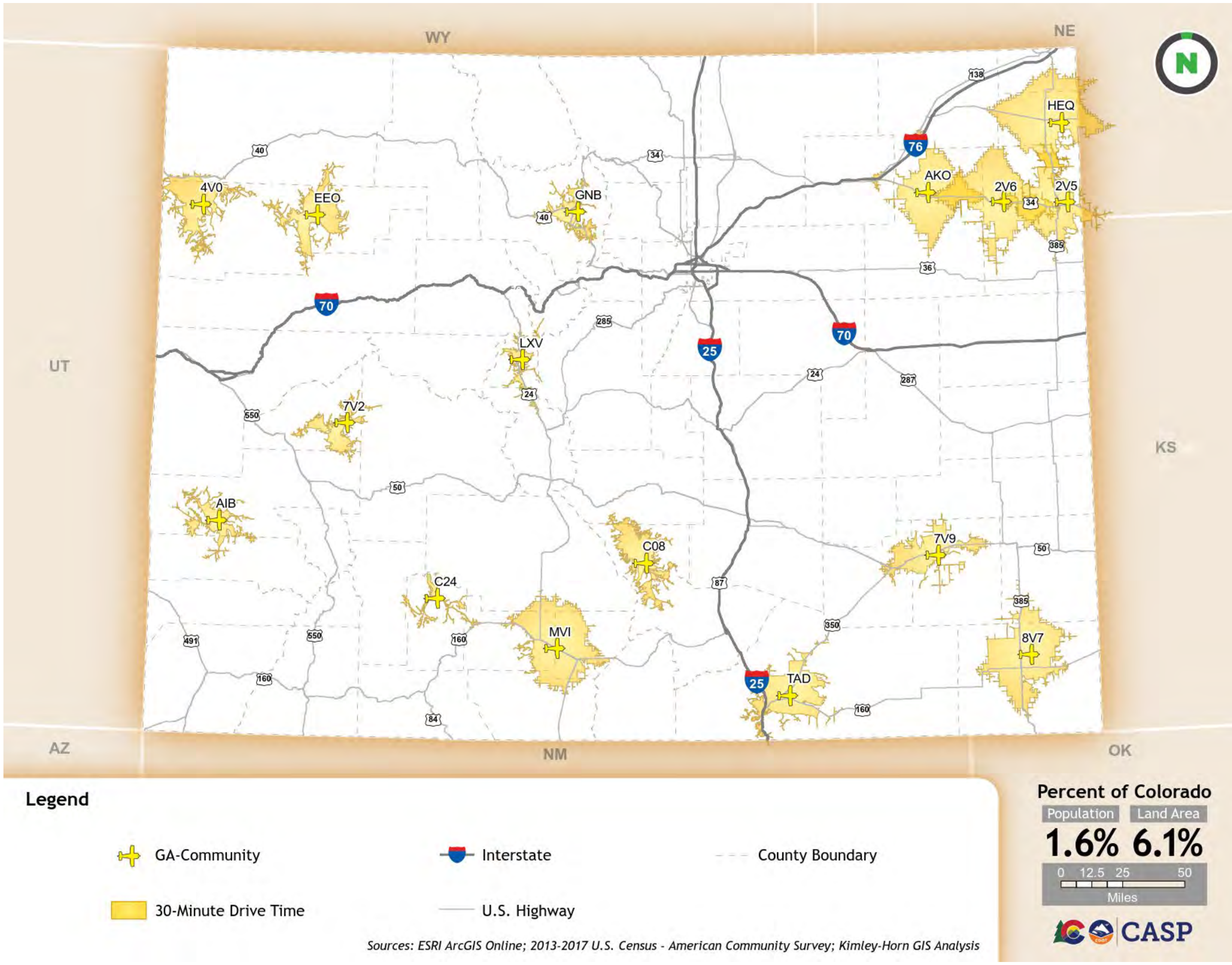
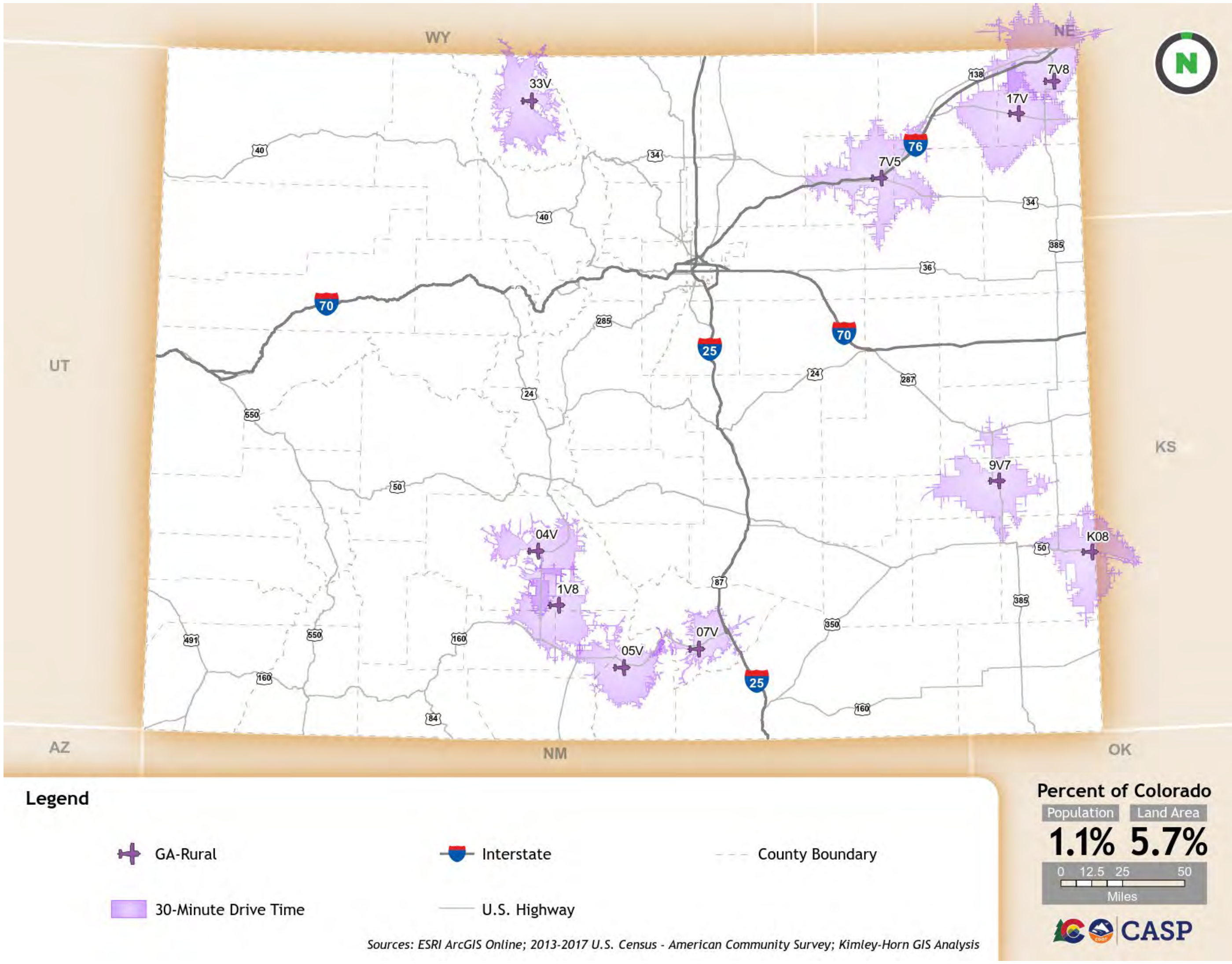


Figure 6.28. 30-Minute Drive Time of GA-Rural Airports



The percent of population and land area encompassed within the 30-minute drive time, arranged by classification, is as follows:

- **Commercial Service:** 34 percent of the population and 4.7 percent of land area
- **GA-National:** 49 percent of the population and 1.3 percent of land area
- **GA-Regional:** 27 percent of the population and 3.0 percent of land area
- **GA-Local:** 23 percent of the population and 7.4 percent of land area
- **GA-Community:** 1.6 percent of the population and 6.1 percent of land area
- **GA-Rural:** 1.1 percent of the population and 5.7 percent of land area

Figure 6.29 through **Figure 6.33** demonstrate the progressing coverage of population and land area that the airports encompass in combination with each other within a 30-minute drive time. The "build" maps shown on the following pages begin by merging Commercial Service and GA-National airports and continually add the next airport classification to show the population and land coverage progression. This analysis showcases how each airport classification's contribution to coverage is an integral component to the overall strength of the system.

Figure 6.29. 30-Minute Drive Time of Commercial Service and GA-National Airports

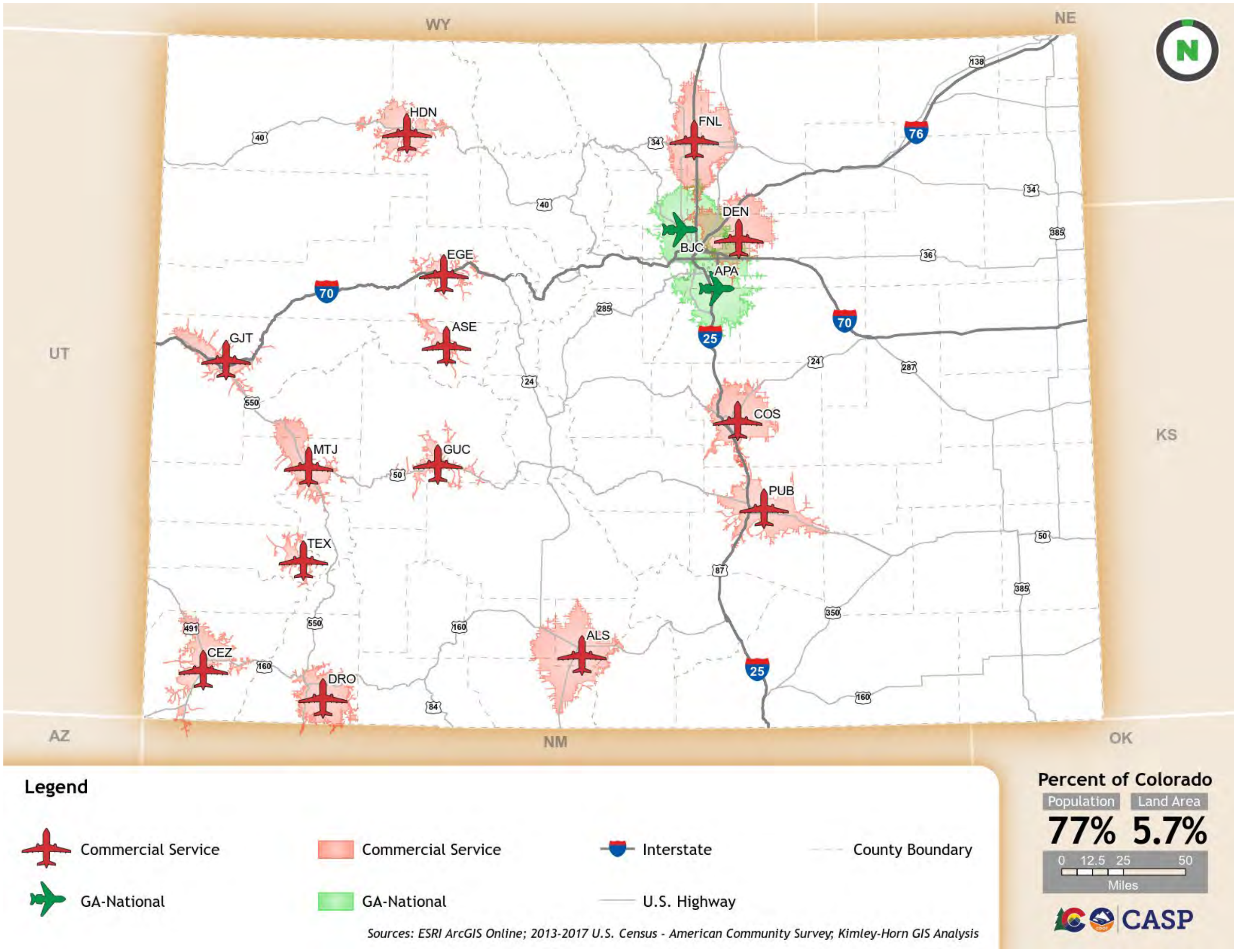


Figure 6.30. 30-Minute Drive Time of Commercial Service, GA-National, and GA-Regional Airports

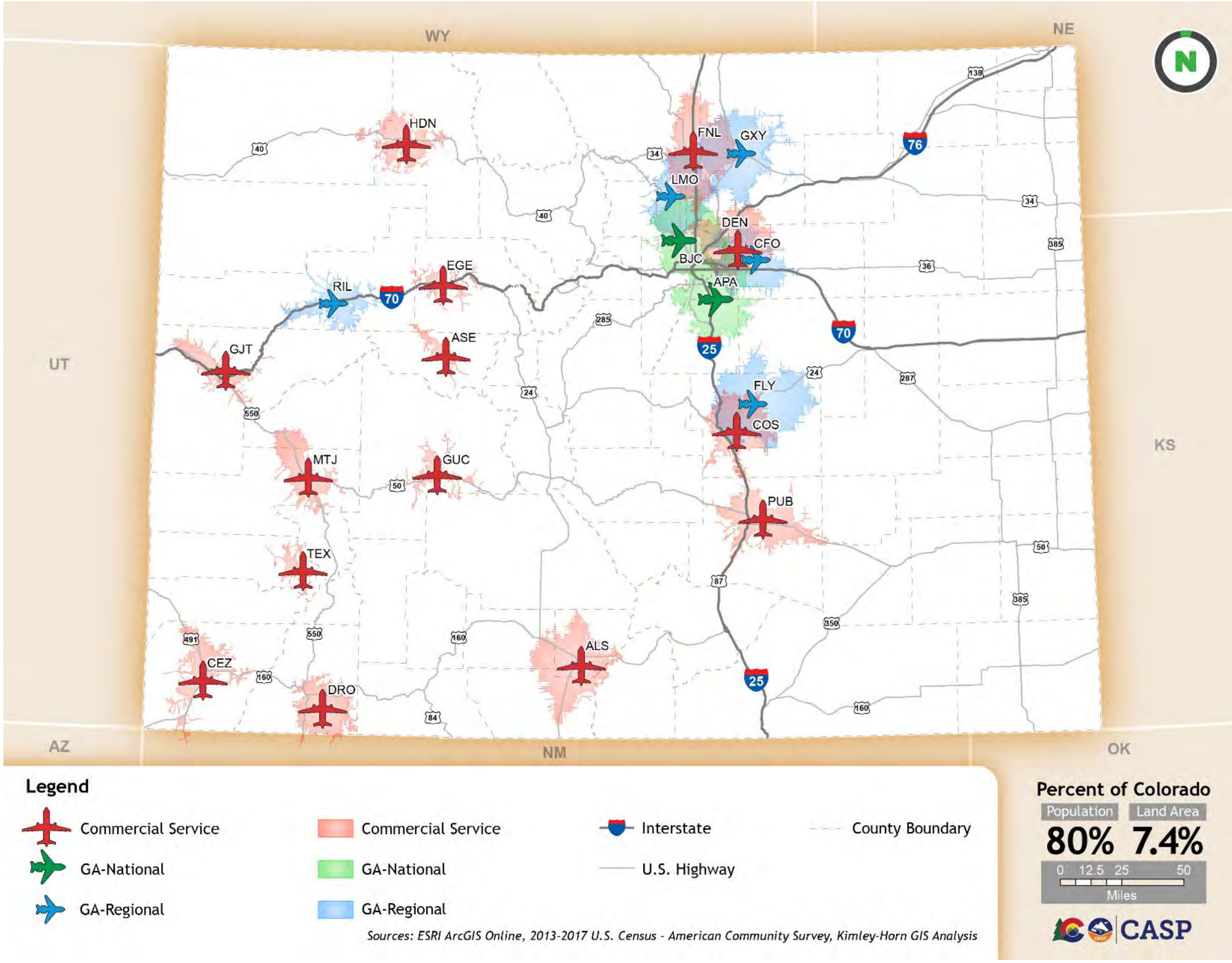


Figure 6.31. 30-Minute Drive Time of Commercial Service, GA-National, GA-Regional, and GA-Local Airports

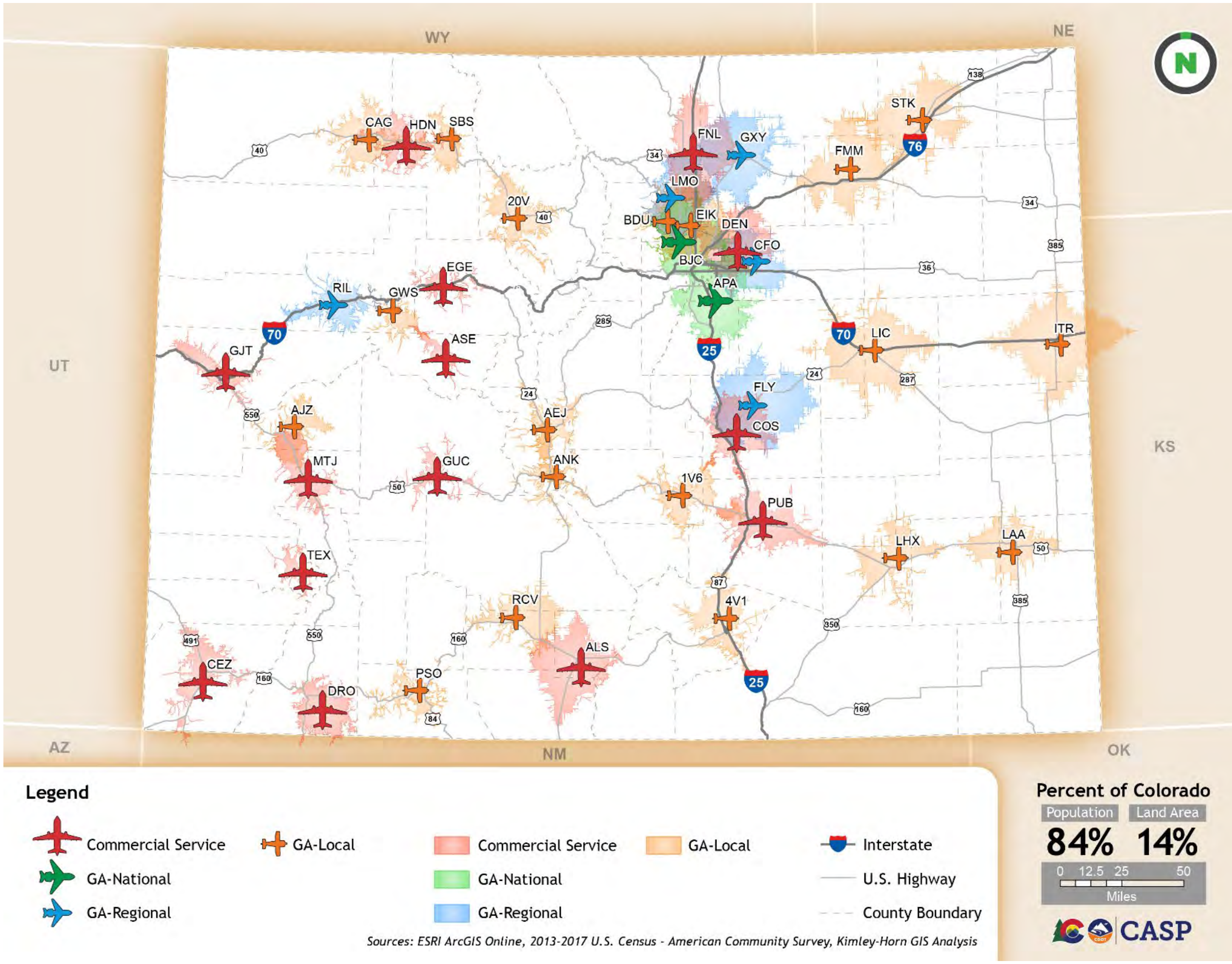


Figure 6.32. 30-Minute Drive Time of Commercial Service, GA-National, GA-Regional, GA-Local, and GA-Community Airports

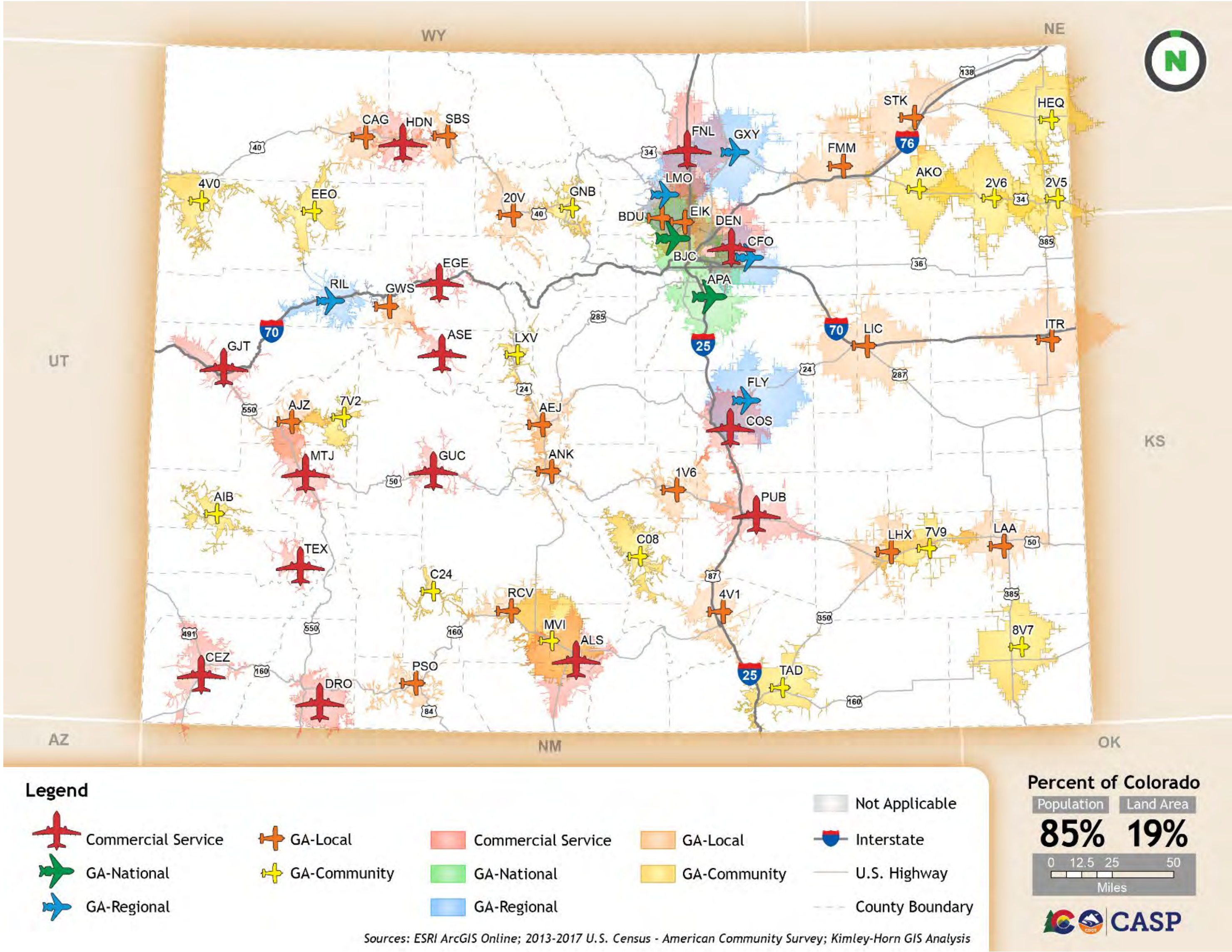
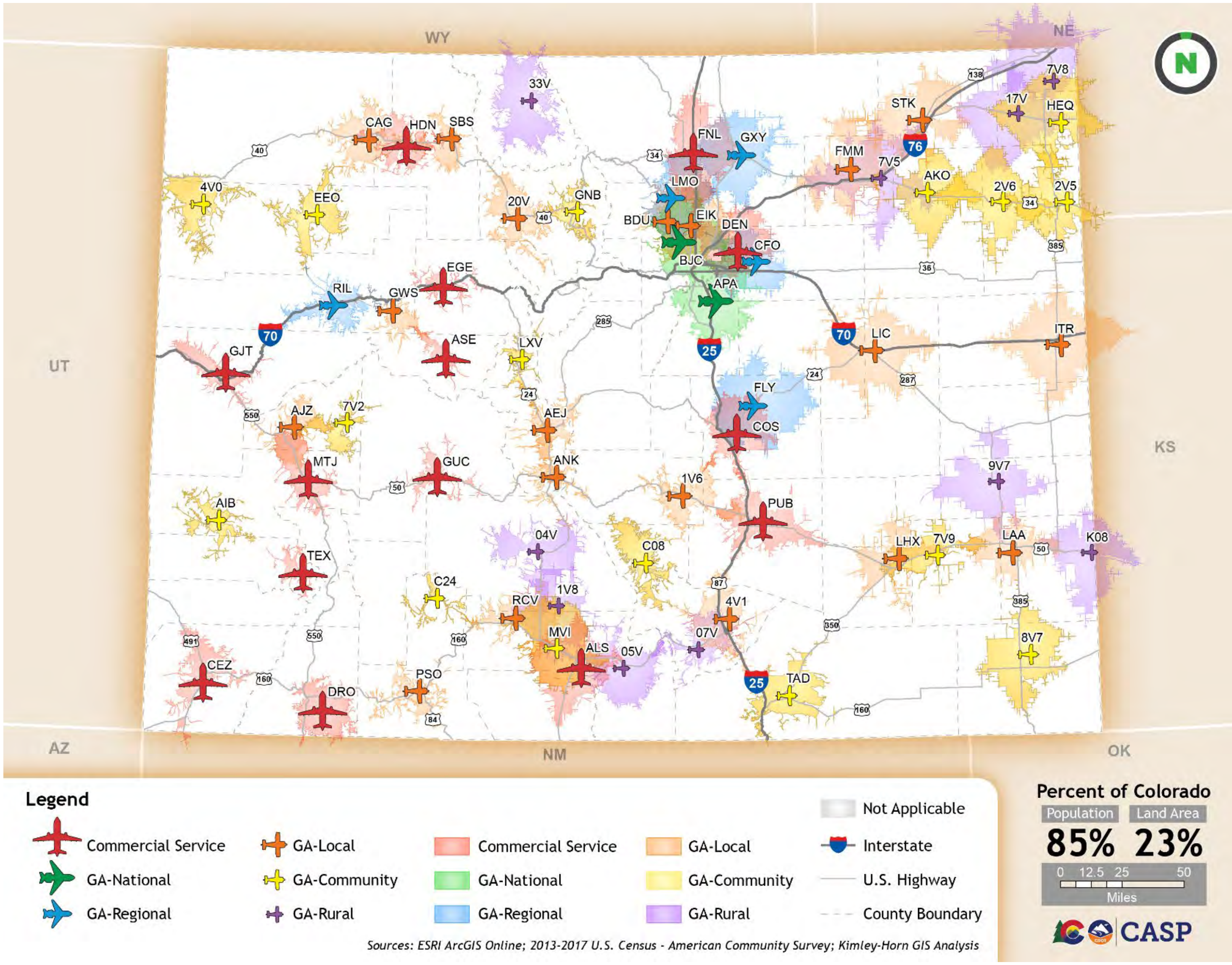


Figure 6.33. 30-Minute Drive Time of All CASP Airports



The resulting coverage from the airport build maps are as follows:

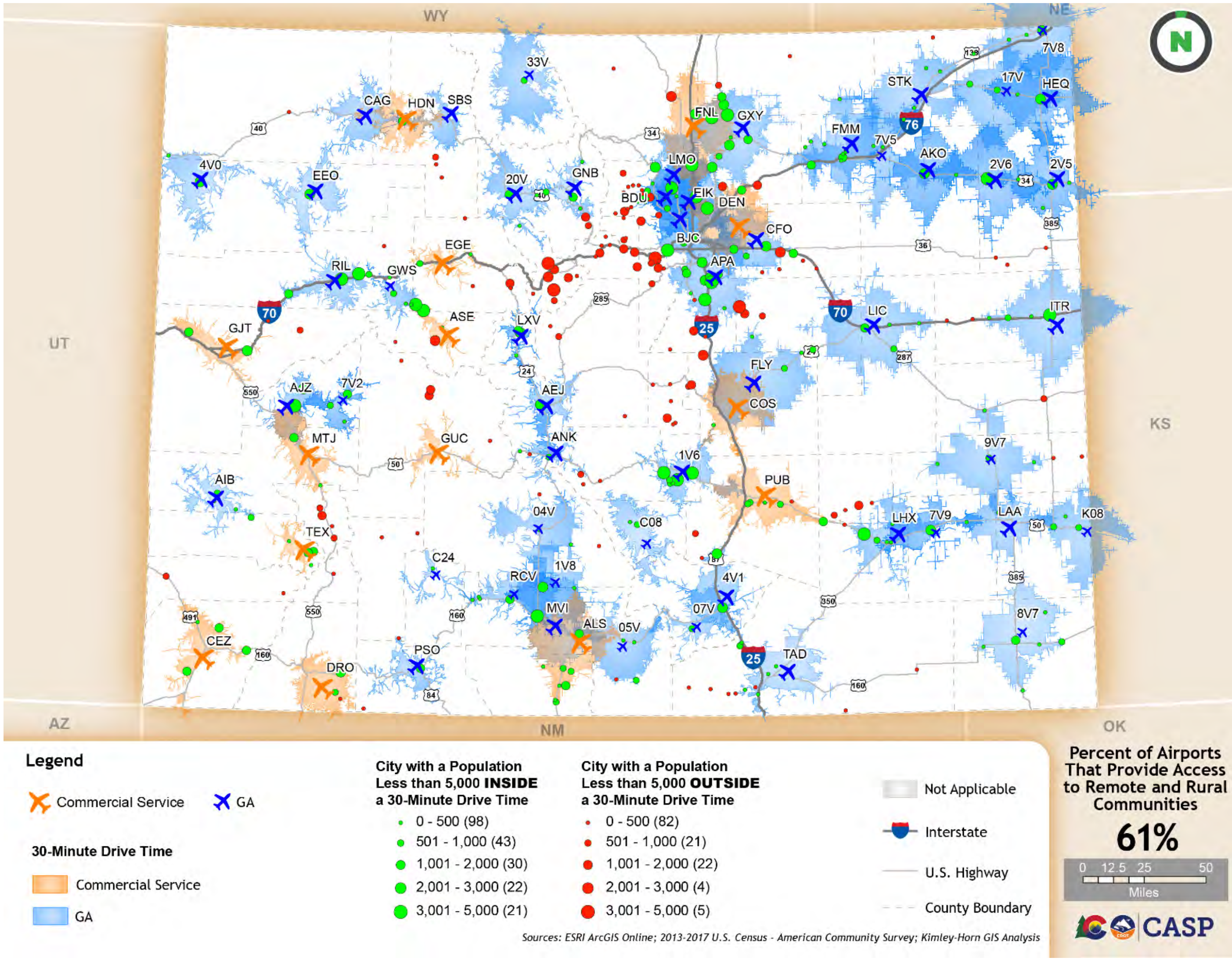
- **Commercial Service and GA-National Airports:** 77 percent of the population and 5.7 percent of land area.
- **Commercial Service, GA-National, and GA-Regional Airports:** 80 percent of the population and 7.4 percent of land area.
- **Commercial Service, GA National, GA-Regional, and GA-Local Airports:** 84 percent of the population and 14 percent of land area.
- **Commercial Service, GA-National, GA-Regional, GA-Local, and GA-Community Airports:** 85 percent of the population and 19 percent of land area.
- **All CASP Airports:** 85 percent of the population and 23 percent of land area.

6.3.2.3. Percent of Airports Providing Access to Remote and Rural Communities

Rural and/or remote communities view airports as a community lifeline. Oftentimes, rural/remote communities rely on airports to facilitate the critical medical transfer of patients, goods and services, cargo, or simply transportation. Commercial service airports are typically located in areas of the state where population density is relatively high. Rural and/or remote communities may have access to commercial service airports, however, the time to get to these facilities can take hours.

For purposes of this analysis, it was determined that a community with a population of less than 5,000 would qualify as a remote and/or rural community. Colorado communities with a population less than 5,000 were mapped using GIS analysis based on 2013-2017 U.S. Census data and compared to the CASP airport locations. Finally, 30-minute drive times were added for all airports which made it possible to identify the communities that were outside of the 30-minute drive time of any CASP airport. The analysis revealed that 61 percent of Colorado's communities that have a population of less than 5,000 are within a 30-minute drive time of a system airport and 39 percent of these communities are beyond a 30-minute drive time to any airport. Results from this analysis are depicted in **Figure 6.34**. Rural/remote communities within the 30-minute drive time are presented in a scaled green dot. Rural/remote communities outside of the 30-minute drive time are presented in scaled red dot.

Figure 6.34. Percent of Airports that Provide Access to Remote and Rural Communities



6.4. Goal: Economic Sustainability

Economic Sustainability

Airports often serve as the catalyst for economic activity such that they directly link people, businesses, goods, and services. To ensure Colorado airports sustain their importance as economic anchors, it is important to leverage and diversify their facilities and services to meet current and anticipated needs of their users. Identifying opportunities and developing relationships to attract new businesses at airports increases their resiliency during economic or market shifts. Working in conjunction with other entities and organizations such as local and regional governments allows the airport to convey long-term goals and protect the ability to respond to future demand through these partnerships. This goal examines the airports' existing relationships, facilities and services, and economic opportunities to assess economic sustainability.

6.4.1. Performance Measures

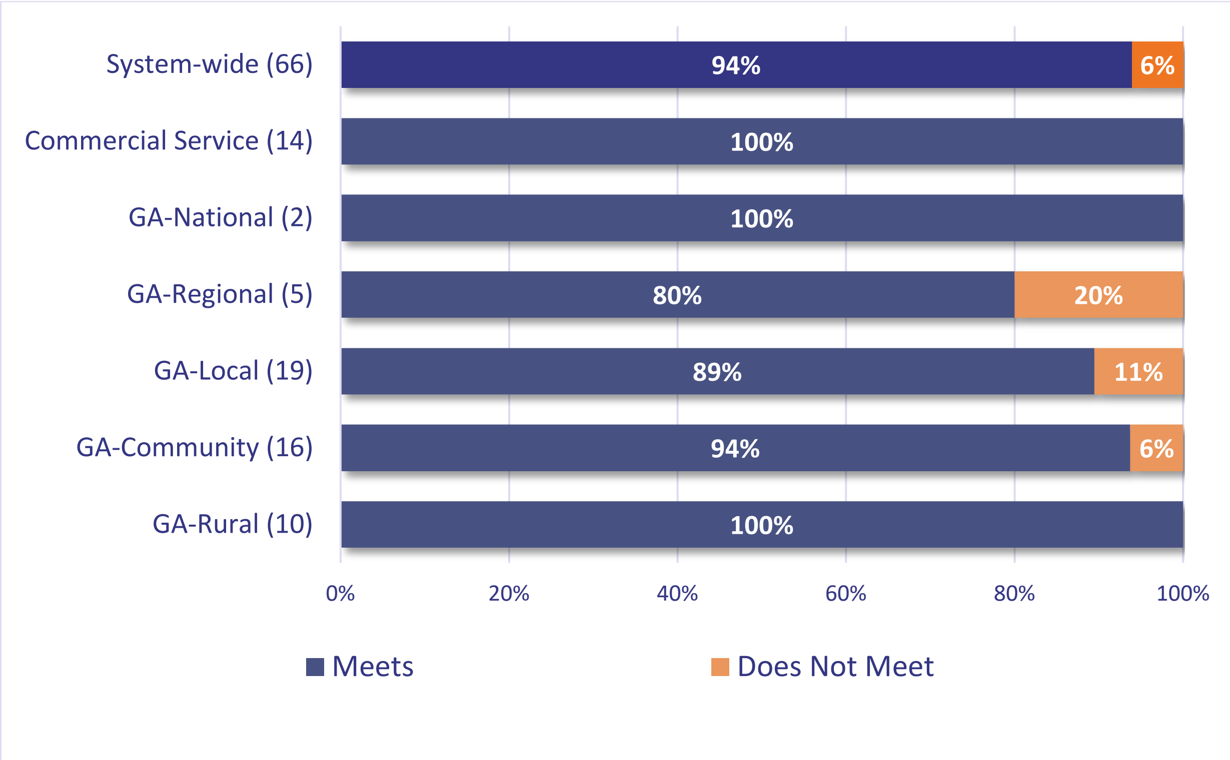
This section discusses the results of the PMs associated with the economic sustainability goal category. PMs for this category include the following:

1. Percent of airports with the necessary fuel type, available 24/7
2. Percent of airports that support the aerospace manufacturing, technology, and/or testing industry
3. Percent of airports with adequate utilities

6.4.1.1. Percent of Airports with Necessary Fuel Type, Available 24/7

Offering fuel facilities that are accessible 24 hours a day, seven days a week (24/7) allows pilots the convenience of fueling their aircraft outside of normal operating hours or when fixed-base operator (FBO) services are unavailable. For this PM, the necessary fuel types for each airport corresponds with the facility and service objectives. Commercial Service, GA-National, and GA-Regional airports are considered to be meeting this PM if they provide full-service aviation gasoline (AvGas/e100 LL) and Jet A fuel. GA-Local and GA-Community airports should provide both AvGas and Jet A fuel facilities 24/7 through either a self-serve facility or call-out service. Fueling facilities at GA-Rural airports should be provided based on community and airport user need/demand. As shown in **Figure 6.35**, the percent of airports that met the minimum service objective determined for their airport classification is relatively high, with 94 percent of airports system-wide meeting the associated objective. GA-Regional airports have the lowest performance with only 80 percent of the airports meeting the objective.

Figure 6.35. Percent of Airports by Classification with Necessary Fuel Type, Available 24/7



Source: 2018 Inventory & Data Form

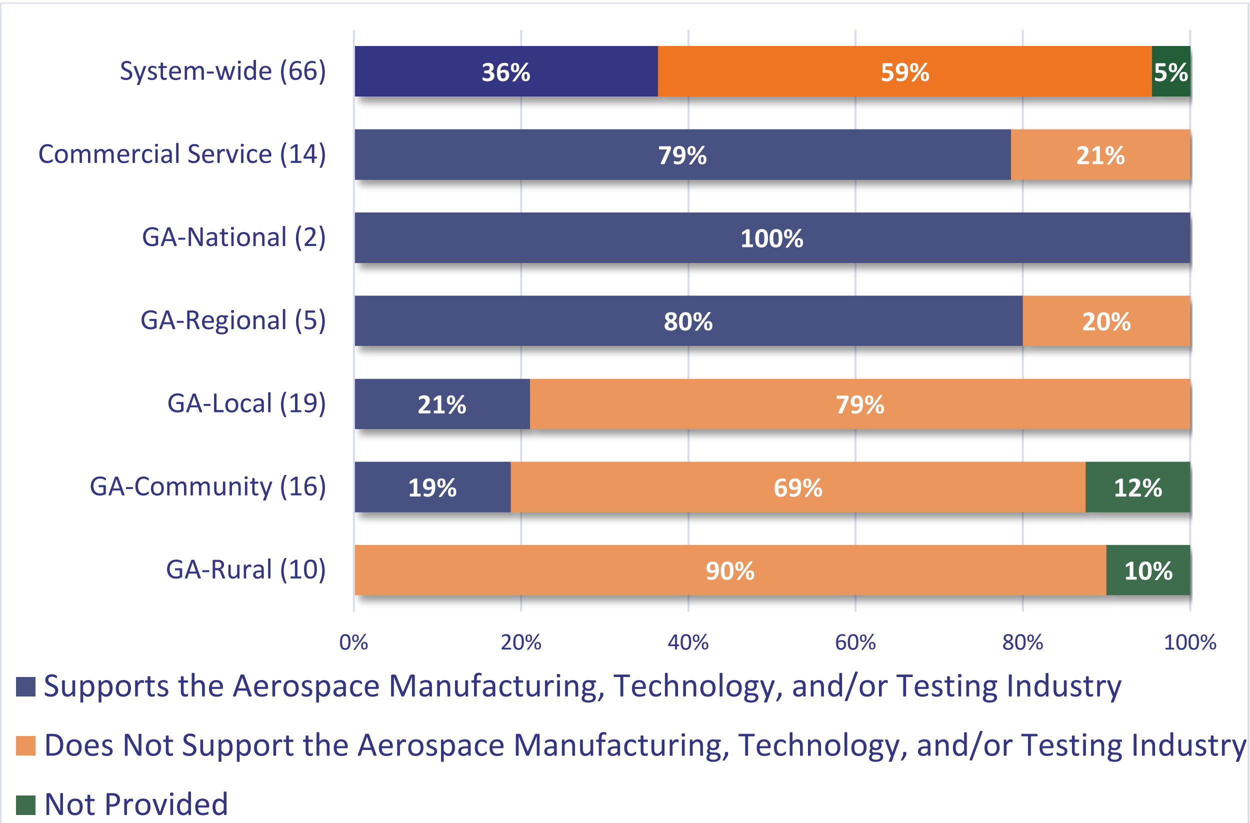
6.4.1.2. Percent of Airports that Support the Aerospace Manufacturing, Technology, and/or Testing Industry

The U.S. Aerospace and & Defense (A&D) industry is one of the largest contributors to the nation's gross domestic product (GDP) and contributed to $374 billion dollars and 2.55 million U.S. jobs alone in 2018[7]. The expanse of A&D services and products covers commercial and GA manufacturing, testing, and technologies amongst countless other outputs. Colorado's high altitude and naturally occurring open space makes it one of the most ideal climates for A&D, especially testing. Colorado boasts the second largest aerospace economy in the nation supported by four military commands, almost 1,000 aerospace companies, approximately 17,000 aerospace employees, and a highly educated population[8]. Aerospace industries gain the ability to conduct high-altitude testing of A&D components and aircraft primarily because of Colorado's unique geography, challenging weather and higher elevations. Aerospace related industries located on-airport is a relationship that benefits both the airport and the client. The presence of an aerospace business indicates the airport is well-positioned economically due to the astounding economic contributions that the aerospace industry provides.

[7] Aerospace Industries Association "2019 Facts & Figures: U.S. Aerospace & Defense", 2019 https://docs.google.com/viewerng/viewer?url=https://www.aia-aerospace.org/wp-content/uploads/2019/09/2019-Facts-and-Figures.pdf&hl=en
[8] Colorado Office of Economic Development & International Trade "Aerospace Industry Profile", 2016 https://choosecolorado.com/wp-content/uploads/2016/06/Aerospace-Industry-Profile_updated.pdf

Airport managers were asked about the presence of any aerospace manufacturer, technology, or and/or testing industry located at their airport. System-wide, about one in every three airports supports at least one of these activities. A large portion of aerospace manufacturing, technology, and/or testing can be found at Commercial Service, GA-National, and GA-Regional airports. **Figure 6.36** displays the system-wide results, and by classification, that have an aerospace-related industry on airport as identified by the airports.

Figure 6.36. Percent of Airports that Support the Aerospace Manufacturing, Technology, and/or Testing Industry



Source: 2018 Inventory & Data Form

Pilatus Aircraft, Ltd is a Swiss aircraft manufacturer known for producing versatile business aircraft that has its U.S. headquarters at BJC. Pilatus opened a 118,000 square-foot state-of-the-art fabrication facility in 2018 and has 120 employees that installs custom executive interiors and exteriors for their PC-12 NGX and PC-24 aircraft. More than 1,800 PC-12 and PC-24 aircraft have been produced, many of which were completed at Rocky Mountain Metropolitan before being exported to customers around the world.

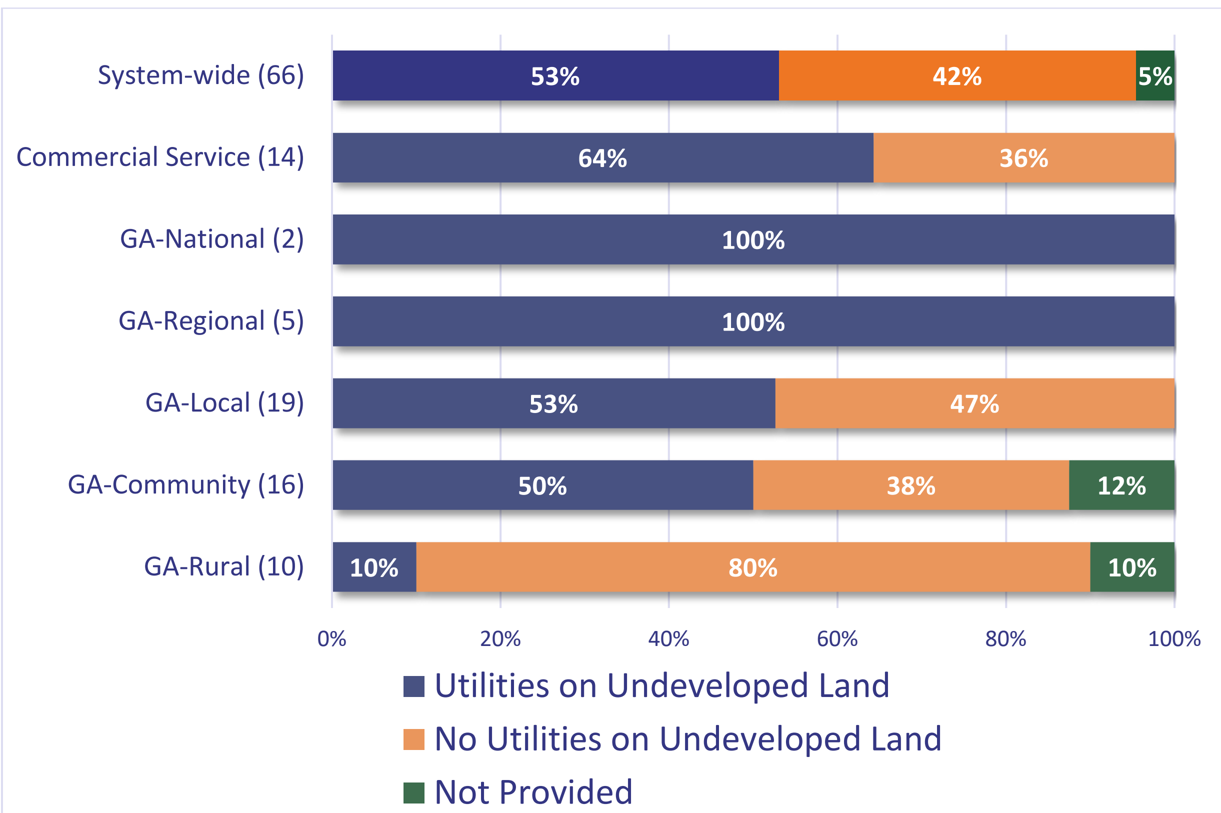
6.4.1.3. Percent of Airports with Adequate Utilities

Utility needs differ from airport to airport. Having adequate utilities to sufficiently supply the needs of the airport now and into the future remains an important consideration when planning for airport development. Outdated or aging infrastructure may result in the recurrence of expensive repairs and replacing them with new infrastructure that accommodates future development may be more cost-effective in the long run. Further, a lack of suitable utility connections may deter potential tenants from developing private facilities on airport property as costs to develop infrastructure may be too high.

Airports were asked during the on-site visits if utilities were available on undeveloped land within the airport property. The presence of existing utilities indicates these areas have been specified for future development and are anticipated to fulfill those needs. Understanding the existence of underground infrastructure impacts development of aboveground facilities.

More than half of system-wide airports (53 percent) report having existing utilities on undeveloped land within the airport property. All GA-National and GA-Regional airports reported utility connections are available on undeveloped land. **Figure 6.37** presents the airports by classification with adequate utilities.

Figure 6.37. Percent of Airports by Classification with Adequate Utilities



Source: 2018 Inventory & Data Form

6.4.2. System Indicators

This section discusses the results of the SIs associated with the economic sustainability goal category. SIs for this category include the following:

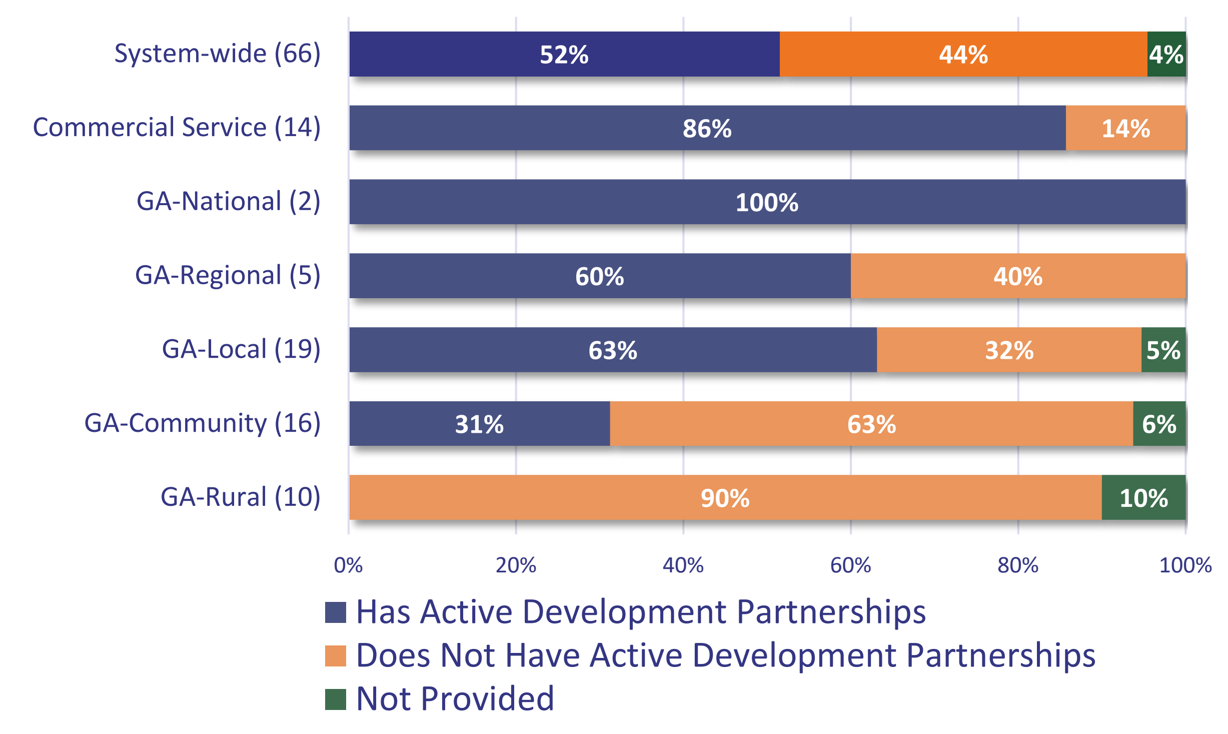
1. Percent of airports with active development partnerships with chambers of commerce, tourism bureaus, organizations, industries, governments, and recreational user groups
2. Percent of airports with business parks or landside real estate development
3. Percent of airports recognized in local and/or regional comprehensive plans
4. Percent of airports that support aerial agricultural application

6.4.2.1. Percent of Airports with Active Development Partnerships with Chambers of Commerce, Tourism Bureaus, Organizations, Industries, Governments, and Recreational User Groups

Active development partnerships between airports and other organizations facilitate mutually beneficial development of facilities or services toward shared goals. Airports can leverage their position as an economic anchor to create partnerships with public or private entities to promote the development of compatible land uses such as business parks, warehouses, and other uses nearby. As a key component to the economic health of many industries across the state, these active development partnerships support shared goals across industries and encourage a greater mix of economic activity to occur within the state.

Information about active development partnerships were gathered through airport responses during the on-site visits. More than half of all airports system-wide reported active development partnerships with four percent of airports not providing an answer to this question. Eighty-six percent of Commercial Service, all GA-National, and more than half of GA-Regional and GA-Local airports have active development partnerships with other organizations. Less than a third of GA-Community airports and none of the GA-Rural airports that responded to the survey were part of an active development partnership. **Figure 6.38** shows the percent of airports by classification that have active development partnerships with other organizations.

Figure 6.38. Percent of Airports by Classification with Active Development Partnerships



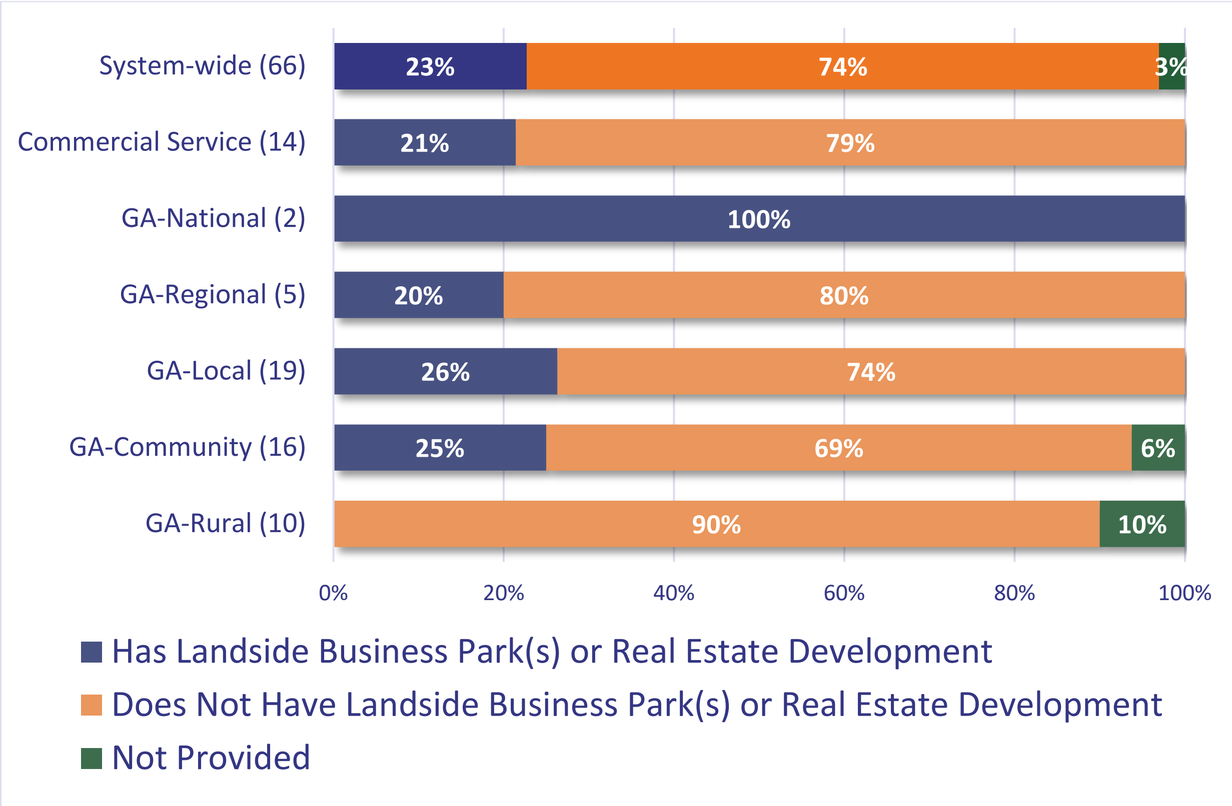
Source: 2018 Inventory & Data Form

6.4.2.2. Percent of Airports with Business Parks or Landside Real Estate Development

Business/commerce parks and other compatible land uses on-airport property promote the occurrence of diverse economic activity and airport users. The presence of on-airport business/commerce parks, warehouses, office space, and other uses indicate the airport's ability to remain resilient in response to changes in the economy through revenue diversification. For smaller airports, the development of these types of facilities may not be practical in terms of cost of development, maintenance, and market viability. Instead, these airports may prefer to focus on the maintenance or expansion of facilities and services based on community needs.

Airports were asked about the presence of business parks or real estate development on their airports through the 2018 Airport Inventory & Data Form. Less than a quarter of system-wide airports reported having these as existing facilities at their airports, with three percent not providing an answer to the question on the survey. Between 20 and 26 percent of Commercial Service, GA-Regional, GA-Local, and GA-Community airports reported having business parks or real estate development on airport property. Of the GA-Rural airports that responded to this question, none had these facilities. **Figure 6.39** presents the results of the survey.

Figure 6.39. Percent of Airports by Classification with Business Parks or Landside Real Estate Development



Source: 2018 Inventory & Data Form

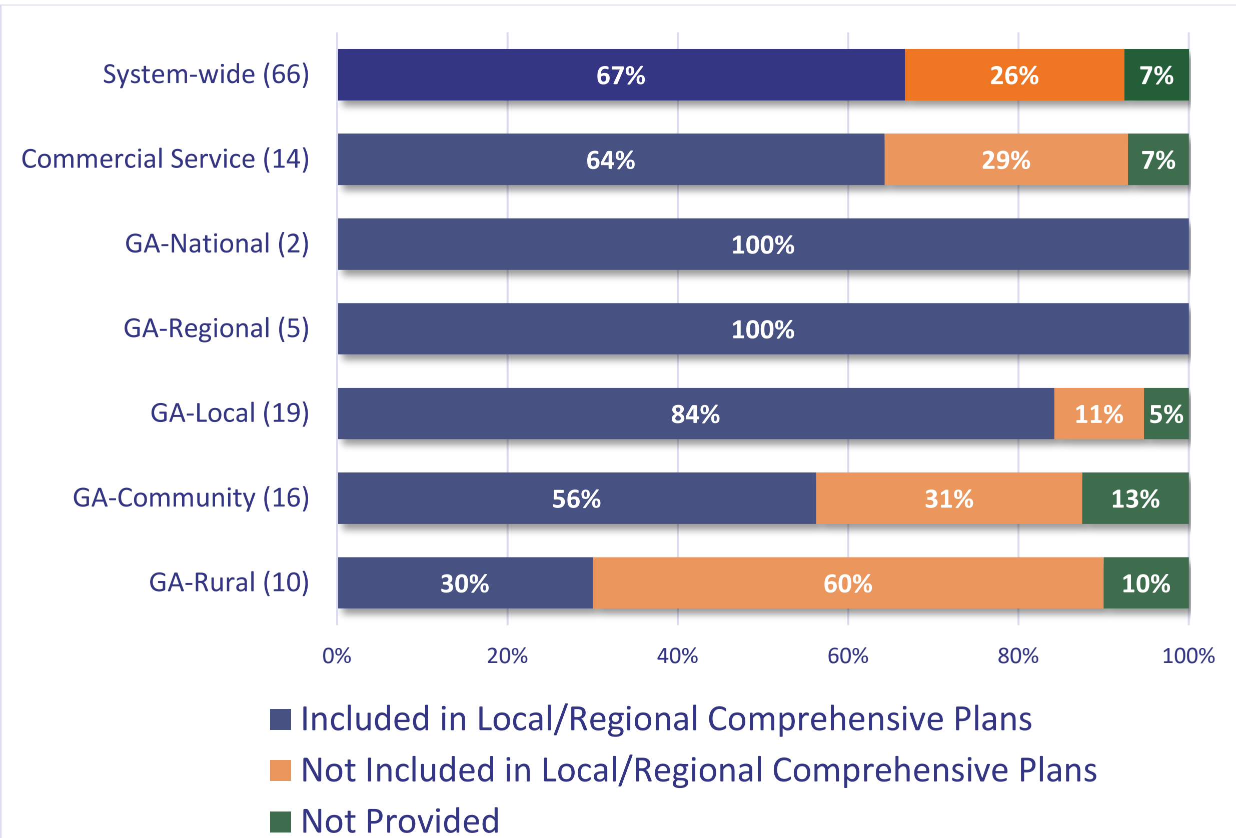
6.4.2.3. Percent of Airports Recognized in Local and/or Regional Comprehensive Plans

Local and regional comprehensive plans or general plans, similar to aviation system plans, are guiding documents which narrate the goals of a municipality or greater regional area and the tactics developed to achieve them. Through comprehensive plans, decision-makers use these documents to make informed choices that align with the community's long-term goals. These overarching goals require extensive collaborative planning and communication between numerous stakeholders which include government entities, the public, business owners, special interest groups, etc. to work together to achieve these goals through the planning horizon.

Comprehensive plans may include specialized planning areas that highlight unique land use, zoning, or other regulatory planning tools to enhance these areas in the future. Airports should be integrated into a regional and/or local comprehensive plan due to their economic importance, vast land use requirements now and into the future, and requirements for land use and height restrictions surrounding them. Local and regional comprehensive plans guide land use development regulations such as zoning which are critical considerations around airports. A lack of development controls or land buffers surrounding airports can inhibit the ability to expand or modernize airport facilities to accommodate different types of aircraft, services, or additional users. A lack of controls may also result in obstructions or incompatible uses within RPZs, close-in obstructions affecting aircraft approaches or departures, and those penetrating 14 CFR Part 77 surfaces. Eliminating these types of developments ensures that the airport can respond to future needs appropriately and mitigate safety risks to persons and properties near and on the airport. Proper land use planning conducted as part of regional and/or local comprehensive plans can enhance airport development and strengthen its economic relationship with the surrounding community.

Airports were asked if they are recognized in local and/or regional comprehensive plans. As a result, two-thirds of system-wide airports reported being represented within their local and/or regional comprehensive plans. All GA-National and GA-Regional airports are included in their regional and local plans. GA-Rural airports represent the classification with the least amount of integration into their community's comprehensive plans at 30 percent. **Figure 6.40** displays the percentage of airports that are recognized in their local and/or regional comprehensive plans.

Figure 6.40. Percent of Airports by Classification Recognized in Local and/or Regional Comprehensive Plans



Source: 2018 Inventory & Data Form

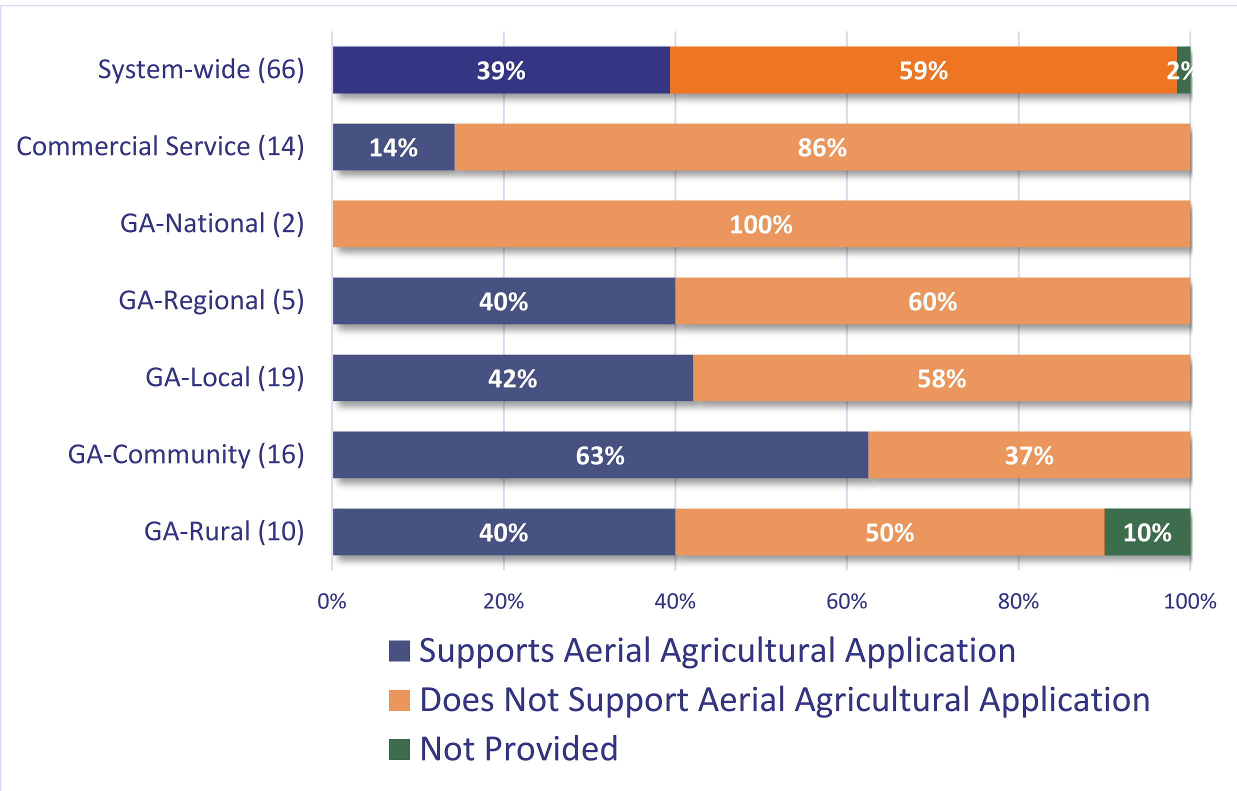
6.4.2.4. Percent of Airports that Support Aerial Agricultural Application

Aerial agricultural application is the utilization of specialized aircraft to perform the necessary functions for healthy crop and/or forest management. Agriculture and agriculture-related industries rely heavily on aerial application operations to protect Colorado's crops such as corn, wheat, potatoes, and oats, from pests and diseases, maintain efficient growing processes, and achieve high crop yields.

Airports that support aerial agricultural applications assist the agriculture industry in maintaining its position as one of the largest contributors to Colorado's GDP.[9] Aerial agricultural application aircraft may be based at a CASP airport or outside of the CASP system. These aircraft have specific needs such as designated chemical mixing and storage areas, depending upon the operator. Many times, these activities are separated from others on the airport due to the potential for contamination or spillage of the chemicals.

Airports were asked if they support and experience aerial agricultural application activity during the on-site visits. Thirty-nine percent of airports system-wide reported supporting aerial agricultural application operations at their airport. GA-Community airports reported the highest share of airports that support aerial agricultural application at 63 percent. GA-National airports report none of their airports support aerial agricultural application. **Figure 6.41** presents the percent of airports by classification that support aerial agricultural application at their airports.

Figure 6.41. Percent of Airports by Classification that Support Aerial Agricultural Spraying



Source: 2018 Inventory & Data Form

[9] Colorado Office of Economic Development and Trade (OEDIT)-*Key Industry: Food & Agriculture*

6.5. Goal: System Viability

System Viability

System viability pertains to the promotion of financial responsibility, protection of investments, and the pursuit of decisions which will improve market stability. Airport infrastructure and maintenance requires large sums of capital investment to ensure that they remain in operational condition. Allowing infrastructure to degrade and reach unacceptable conditions for replacement is oftentimes significantly more expensive than performing routine maintenance to keep them in good condition. To protect the airport's substantial investment, incorporation of pavement management plans is fiscally responsible and integral to extending the life-cycle of current pavements. The opportunities identified through analysis of national aviation and related industries were also taken into consideration for this goal. As aviation demand increases and is projected to continue to increase, the need for more aviation workers grows in direct correlation. Cultivating the next generation of pilots and aviation professionals is imperative to mitigating shortfalls in workforce that could limit Colorado's airports from experiencing future growth.

6.5.1. Performance Measures

This section discusses the results of the PMs associated with the system viability goal category. PMs for this category include the following:

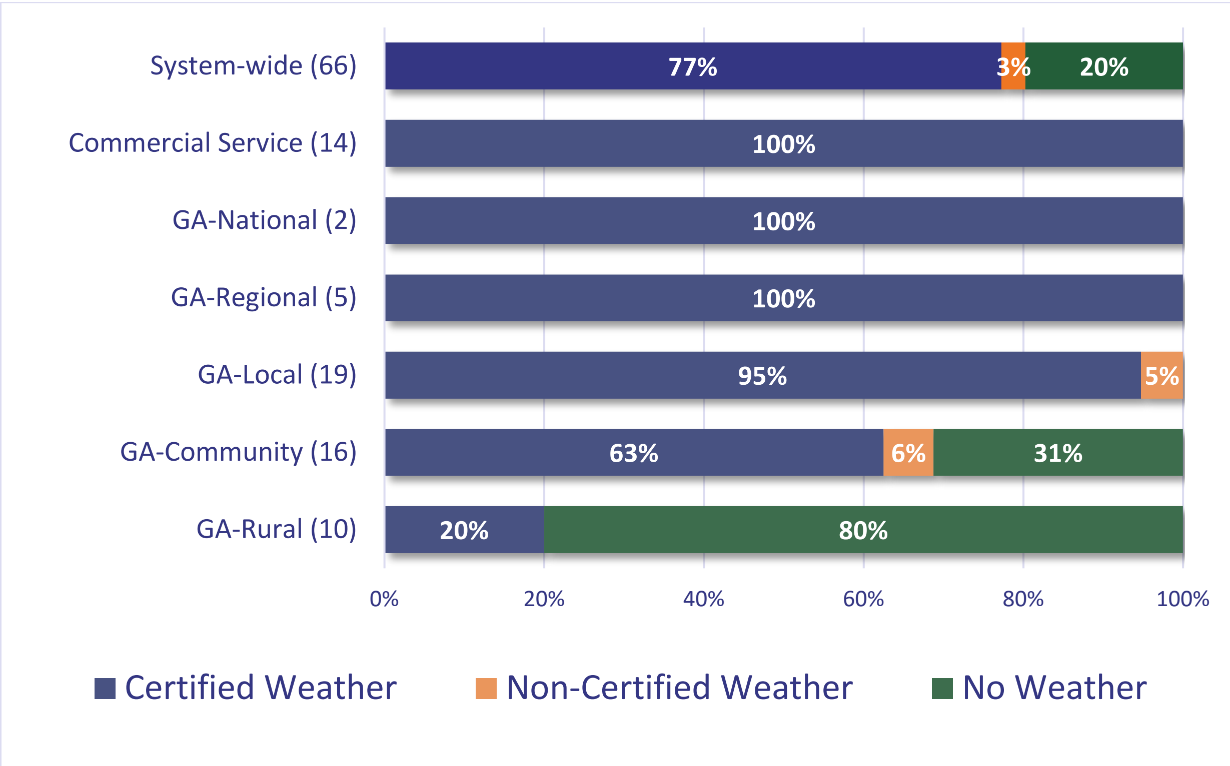
1. Percent of airports with certified on-site weather reporting (AWOS or ASOS)
2. Percent of airports with pavement maintenance programs
3. Percent of airports with an average runway and taxiway pavement condition index (PCI) of 70 or greater

6.5.1.1. Percent of Airports with Certified On-Site Weather Reporting (AWOS or ASOS)

Automated weather observing systems (AWOS), automated surface observing systems (ASOS), and automated UNICOM systems communicate meteorological conditions to pilots to safely navigate aircraft to and from the airport as well as navigate through nearby airspace. These systems report on weather environments including all or some of the following: ceilings, visibility, precipitation, wind, barometric pressure and other elements that impact flight conditions.

Weather reporting stations at CASP airports were identified as part of the inventory process, however, identifying those that are "certified" was of key importance related to this SI. A certified weather reporting station reports weather data to the National Airspace Data Interchange Network (NADIN). The NADIN is a private FAA data network accessible to only approved users. Seventy-seven percent of system-wide airports have certified weather reporting located on their airports. Three percent of system-wide airports possessed a non-certified weather reporting system and 20 percent did not have a system. GA-Local, GA-Community, and GA-Rural airports were identified as having less than 100 percent of their airports with a certified weather-reporting system on-site. Twenty percent of GA-Rural airports had a certified system and 80 percent did not have an on-site weather reporting system at all. **Figure 6.42** reports the presence of certified or non-certified weather reporting stations at system airports.

Figure 6.42. Percent of Airport by Classification with Certified On-Site Weather Reporting (AWOS or ASOS)



Source: 2018 Inventory & Data Form

6.5.1.2. Percent of Airports with Pavement Maintenance Programs

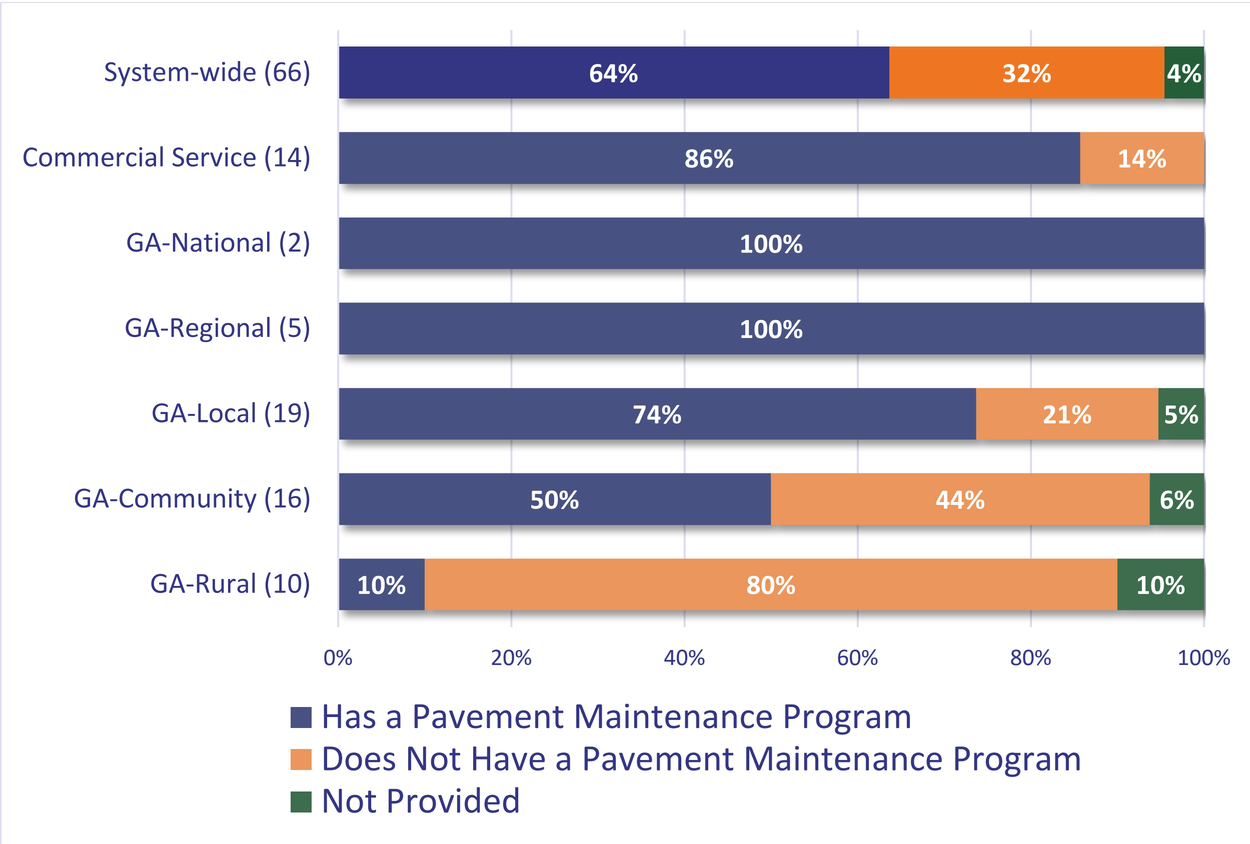
The conditions of an airport's pavements are critical to the safe navigation of aircraft on runways, taxiways, and aprons. Pavement rehabilitation may be one of the single-most expensive capital investments that an airport can make, therefore, proper evaluation of conditions and maintenance over time is essential to protecting this investment. An airport pavement maintenance program employs a system of evaluative tools and schedules for airports to maintain their runways and prepare for pavement rehabilitation needs in the future. A pavement maintenance program provides important indicators to understand current pavement conditions and uses a set of indicators to assess the rate of degradation to predict when rehabilitation should occur. Executing maintenance and rehabilitation (M&R) techniques to keep the pavement from dropping below fair or poor conditions is estimated to be four to five times less expensive than rehabilitating pavement conditions when it drops below those thresholds[10].

Figure 6.43 shows the percentage of airports by classification that have a program to maintain their pavements. Out of all airports system-wide, 64 percent have PMPs that are used in maintenance decisions. Of these, all GA-National and GA-Regional airports and 86 percent of Commercial Service

[10] FAA AC 150/5380-7B " Airport Pavement Management Program" October 2014: https://www.faa.gov/documentlibrary/media/advisory_circular/150-5380-7b.pdf

airports have these plans. Inversely, 80 percent of GA-Rural airports did not have a pavement maintenance program, with 10 percent reporting having a plan, and 10 percent not responding to the survey question.

Figure 6.43. Percent of Airports by Classification with Pavement Maintenance Programs



Source: 2018 Inventory & Data Form

6.5.1.3. Percent of Airports with an Average Runway and Taxiway Pavement Condition Index (PCI) of 70 or Greater

While the previous PM identified the availability of pavement maintenance programs, this PM addresses the current pavement conditions specific to runways and taxiways. As previously noted, maintaining adequate pavement conditions is one of the largest costs to an airport and implementing proper pavement management techniques protect these capital investments and increase the usable life of paved areas. The pavement condition index (PCI) is the industry standard used to represent the current state of the paved surface on a scale from 0 (unacceptable/failed) to 100 (new/perfect condition). Paved surfaces with a PCI rating of 70 are in “fair” condition. Maintaining a PCI rating of 70 or higher significantly increases the usable life of the paved surface and is considerably cheaper than investing in major rehabilitation projects if runway and taxiway pavements drop below this threshold.

CDOT gathers and maintains their own pavement data for system airports. **Table 6.8** displays the results of CDOT’s data collection for system airports for 2018. The weighted average PCI is derived from the collective averages of all primary surfaces by type in the system. Paved surfaces with greater total surface area are given a higher weight than those with less area. Therefore, airports with larger primary runways or applicable surface areas will have more weight than smaller, single-runway, GA airports with less surface area. The weighted average PCI for runways and taxiways is above fair conditions. Overall, CDOT's report shows that the pavement conditions in the system exceed the 70 PCI threshold.

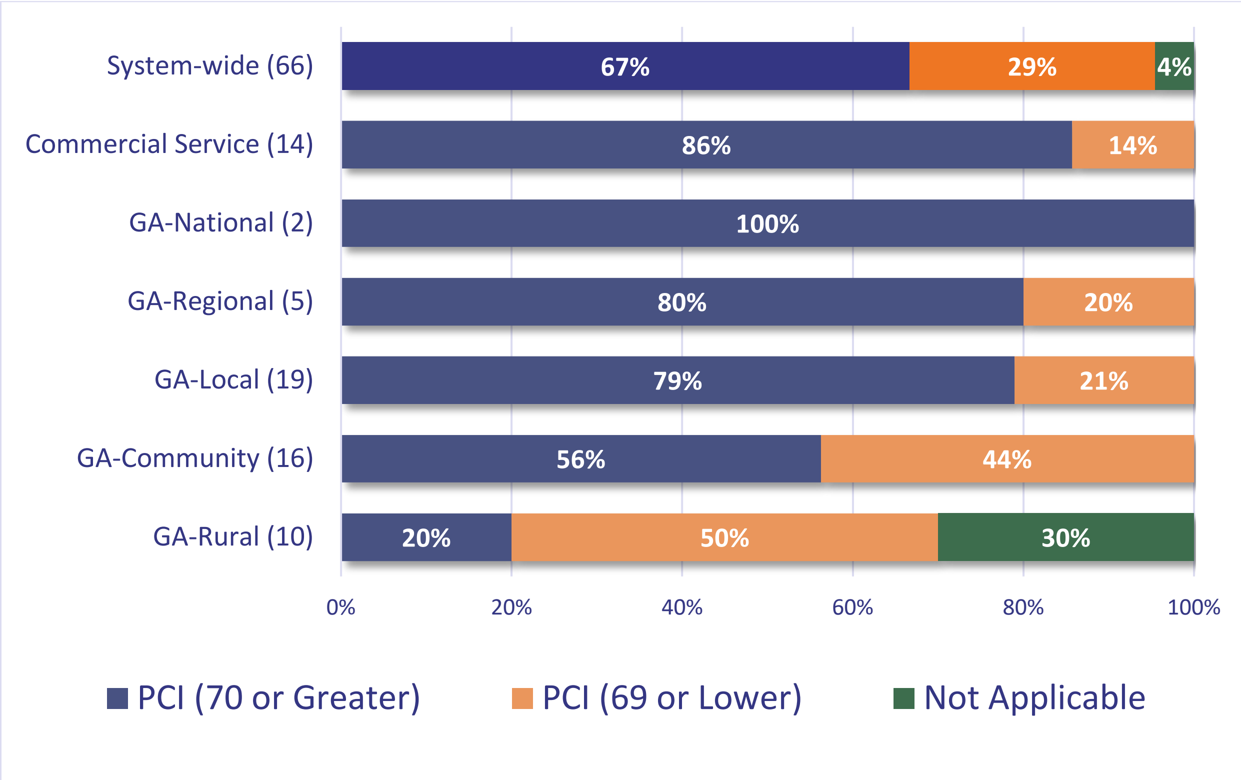
Table 6.8. 2018 PCI Ratings for System Airports by Area

PCI Data Gathered from CDOT's PCI Program					
Use Category	Number of Sections	Total Area (Sq Ft.)	Arithmetic Average PCI	Average PCI Standard Deviation	Weighted Average PCI
Apron	263	24,032,501.59	73.31	23.68	72.73
Helipad	5	40,036.00	70.40	37.34	59.68
Runway	111	48,974,189.21	76.60	19.83	79.04
Taxiway	580	36,846,841.17	74.21	21.47	75.34
All	**959**	**109,893,567.97**	**74.22**	**22.05**	**76.41**

Source: CDOT Pavement Evaluation and Management, 2018

As part of the system performance analysis, information about PCI conditions were gathered at the micro-level to gain insights into the conditions on an airport-by-airport basis. As such, the primary runway for each airport was reviewed to determine the PCI rating for that airport. Overall, 67 percent of airports' primary runways were rated at 70 or greater. One hundred percent of the GA-National airports had primary runways at or about a PCI rating of 70. Commercial Service, GA-Regional, and GA-Local airports have the next highest representation of airports with PCI ratings at 70 or higher. Thirty percent of GA-Rural airports were deemed as not applicable, as they did not have a paved runway. **Figure 6.44** summarizes the results of the analysis by airport classification.

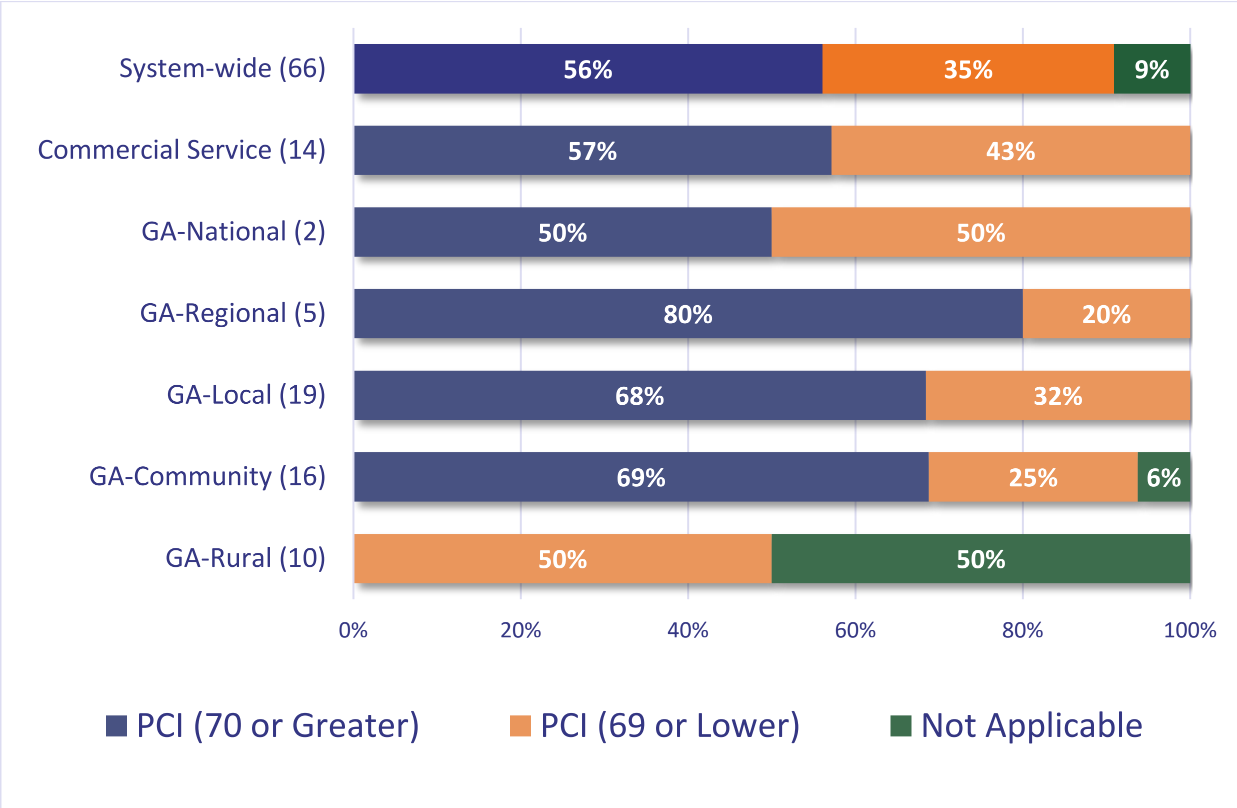
Figure 6.44. Percent of Airports by Classification with a Primary Runway PCI of 70 or Greater



Source: CDOT Pavement Evaluation and Management, 2018

Primary taxiway PCIs at CASP airports were also examined and presented in **Figure 6.45**. System-wide, 56 percent of CASP airports' primary taxiways have a PCI of 70 or greater. Of the GA-Rural airports with a primary taxiway, none have an average PCI of 70 or greater. At least 50 percent of Commercial Service, GA-National, GA-Regional, GA-Local, and GA-Community airports have a primary taxiway PCI of 70 or greater.

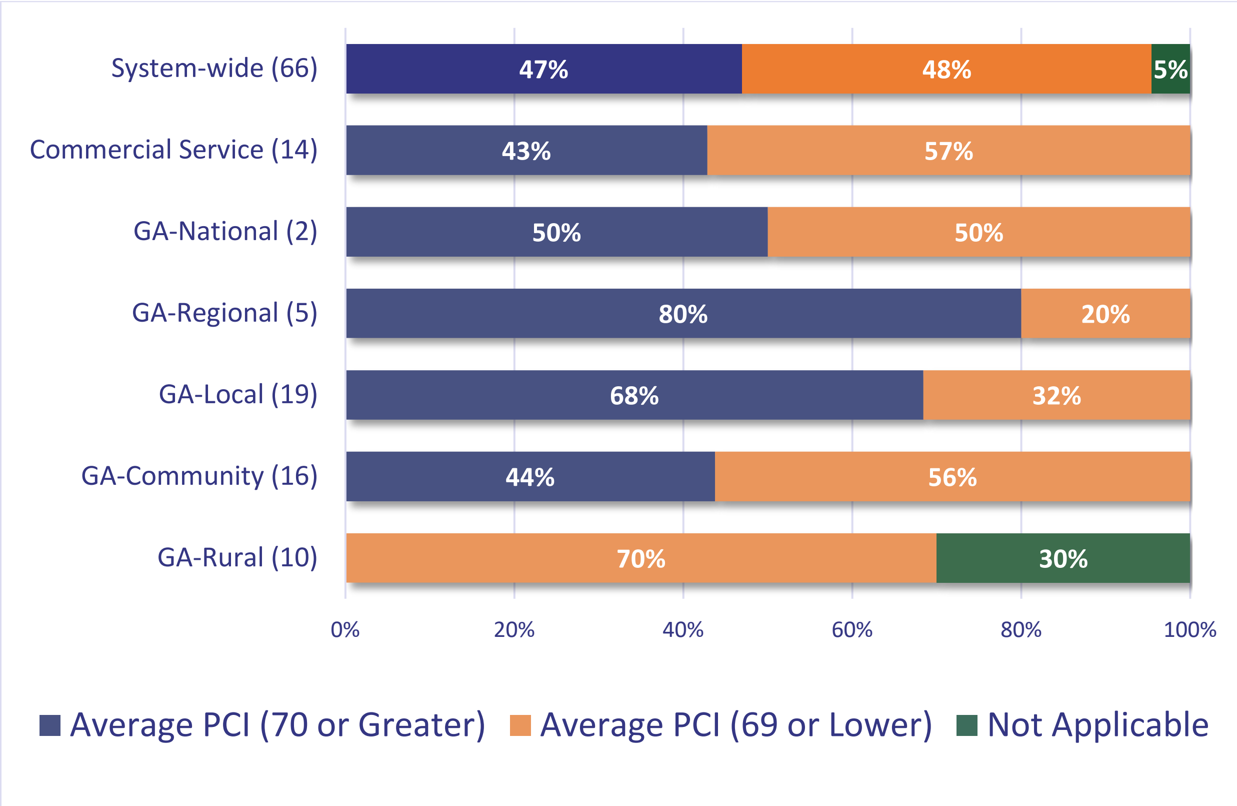
Figure 6.45. Percent of Airports by Classification with an Average Primary Taxiway PCI of 70 or Greater



Source: CDOT Pavement Evaluation and Management, 2018

The PM combines and analyzes the average PCI ratings for both the primary runway and taxiway. If the average PCI for the primary runway and the average PCI for the taxiway for the primary runway are both at or above 70, the airport is considered meeting the PM. A little less than half of all airports in the system meet the PM as described. GA-Regional airports have the highest percentage of airports that have a combined PCI rating of 70 or greater. 70 percent of GA-Rural airports do not meet the runway and taxiway PCI guidelines with 30 percent not having an applicable paved area. **Figure 6.46** shows the airports by classification whose primary runway and taxiway both have PCI ratings of 70 or greater.

Figure 6.46. Percent of Airports by Classification with an Average Primary Runway and Primary Taxiway PCI of 70 or Greater



Source: CDOT Pavement Evaluation and Management, 2018

6.5.2. System Indicators

This section discusses the results of the SIs associated with the system viability goal category. SIs for this category include the following:

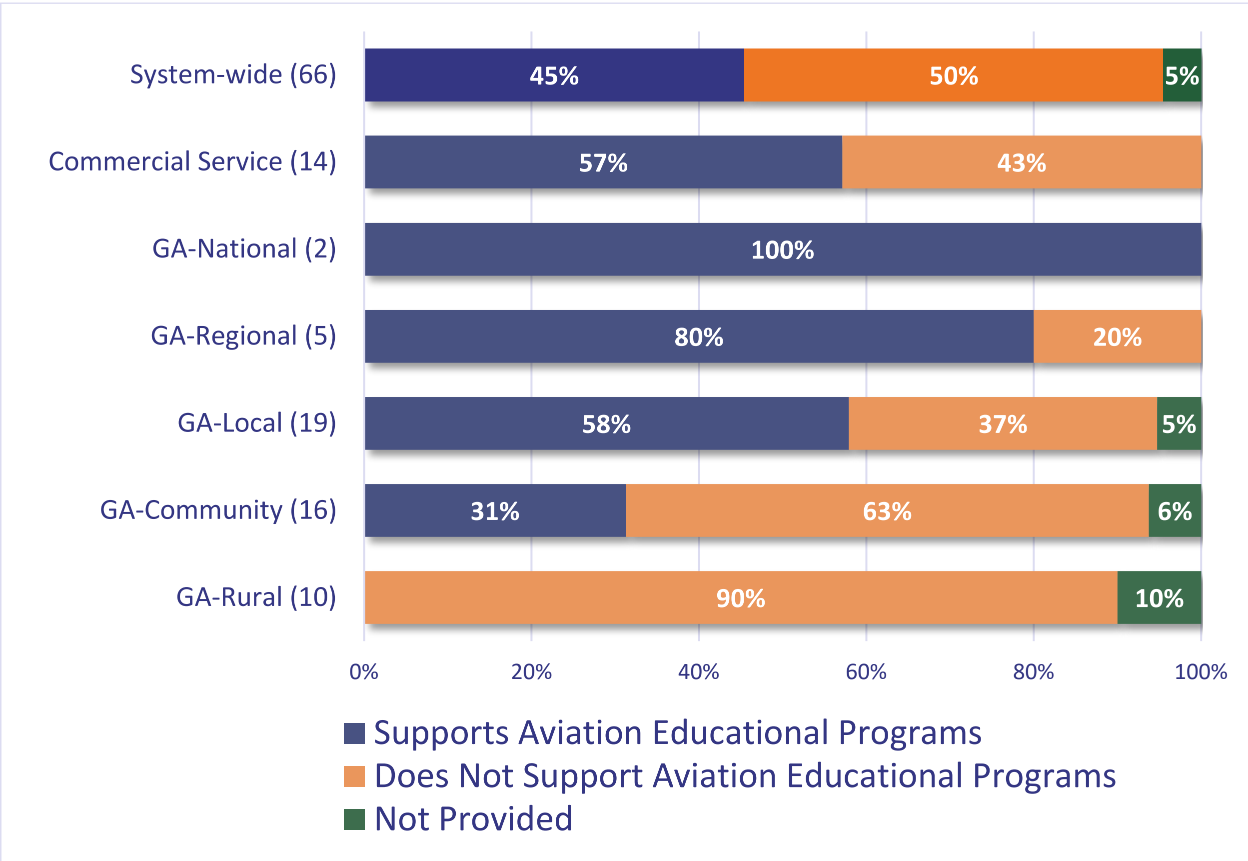
1. Percent of airports that support aviation educational programs
2. Percent of airports with a sustainability plan
3. Number of Colorado pilots per capita

6.5.2.1. Percent of Airports that Support Aviation Educational Programs

Aviation and aerospace industries are facing a shortage in workforce especially as these industries continue to rapidly expand. Aviation education programs are essential to providing pathways and generating job interests in these fields. A number of new federal investment programs have been approved aimed at promoting careers in aviation and sufficiently preparing the next generation of aviation professionals. Airport involvement in facilitating educational programs is imperative to the growth of the aviation workforce. Airports may offer their own aviation educational programs, and these may take the form of, but are not limited to: hosting field trips, speaking at schools, hosting workshops, teaching higher education courses focused on aviation, offering workshops and technical skills training, etc.

Airport managers were asked if their airport supports aviation educational programs. The responses showed that less than half of all airports system-wide report supporting aviation education programs at their airport. GA-National, GA-Regional, GA-Local, and Commercial Service airports respectively represent the classifications with the most representation for having an aviation educational program at their airport. Of the GA-Rural airports, 90 percent did not support an educational program and 10 percent did not respond. **Figure 6.47** presents the percentage of airports by classification that supports some form of aviation educational program.

Figure 6.47. Percent of Airports by Classification that Support Aviation Educational Programs



Source: 2018 Inventory & Data Form

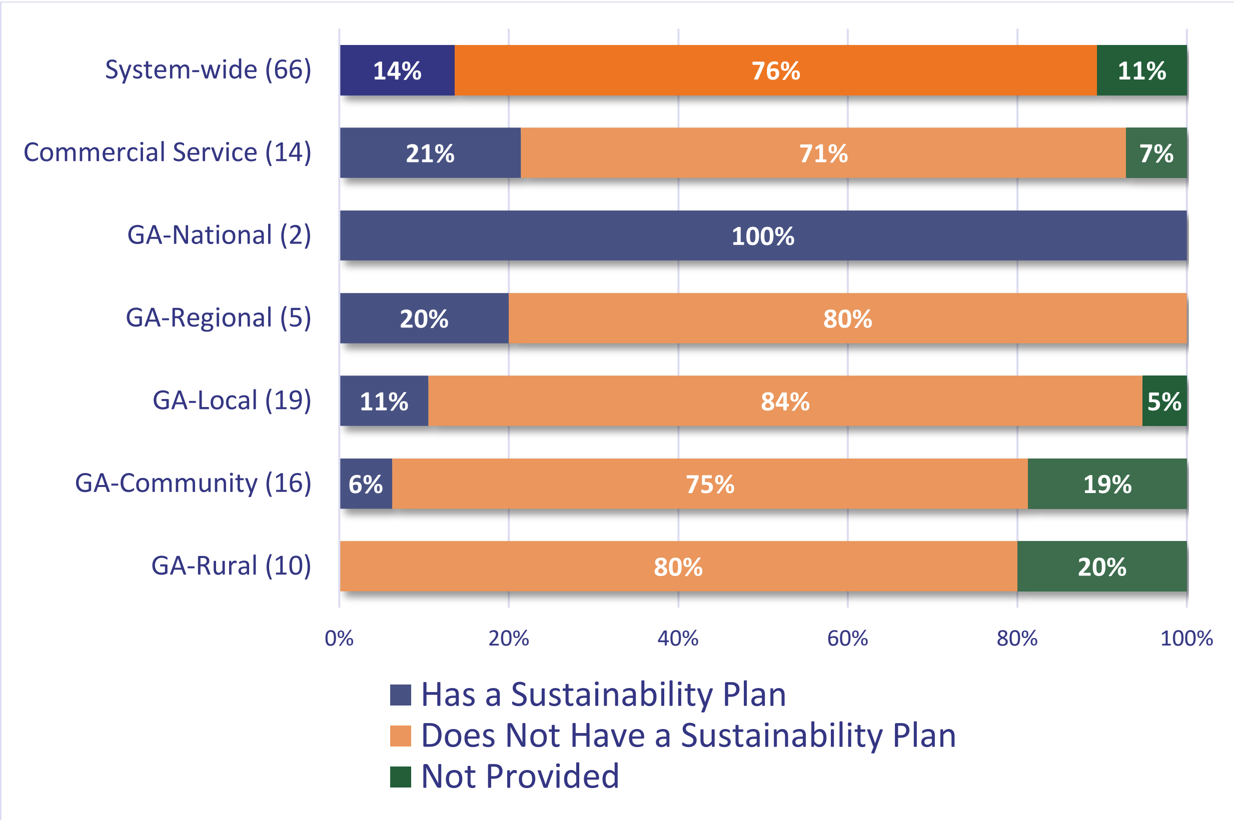
6.5.2.2. Percent of Airports with a Sustainability Plan

Sustainability is a broadly defined term and as such, airports can establish their own definitions and approaches to achieve their own unique vision of sustainability. Airports across the U.S. are moving towards the adoption of sustainability plans to continually align their actions with goals such as reducing their environmental impact, advancing economic stability, and ensuring the airport fits the needs of the local community. Airports can adopt a sustainability master plan, which is typically incorporated into the airport master plan and/or prepare a sustainability management plan, which is a standalone written document, or portion of a larger airport or community document/plan which specifically addressed the community's efforts to ensure the airport's environmental, operational, social and/or economic sustainability. Due to the importance of implementing sustainability initiatives at airports, Colorado airports are able to explore grant funding opportunities offered by the FAA, CDOT, local government entities, energy companies, etc. to assist in funding the development of an airport's sustainability planning document.

As mentioned in **Chapter 2. Inventory of System Condition**, in 2016, CDOT's Division of Aeronautics implemented the Colorado Airport Sustainability Program that is intended to guide and provide necessary resources for airports to prepare their own sustainability plans. The goal of the program is to ultimately advance economic, social, operational, and environmental sustainability at airports in Colorado through their free, user-friendly, web-based toolkit. This program has resulted in the completion of four sustainability plans for Rifle-Garfield County Regional (RIL), Centennial Airport (APA), Rocky Mountain Metropolitan Airport (BJC), and Fremont County (1V6). These plans are used as models for other airports looking to develop their own sustainability plans through the program.

During the inventory process, airports were asked if they had a sustainability plan. Overall, 30 percent of airports system-wide reported having sustainability plans and 11 percent did not respond to the question on the survey. One hundred percent of GA-National and over half of Commercial Service and GA-Regional airports had a sustainability planning document. Less than one-third of GA-Local airports, less than a tenth of GA-Community, and no GA-Rural airports reported having sustainability plans. **Figure 6.48** shows the results of the survey responses and reflect the percentage of airports by classification with sustainability plans.

Figure 6.48. Percent of Airports by Classification with Sustainability Plans

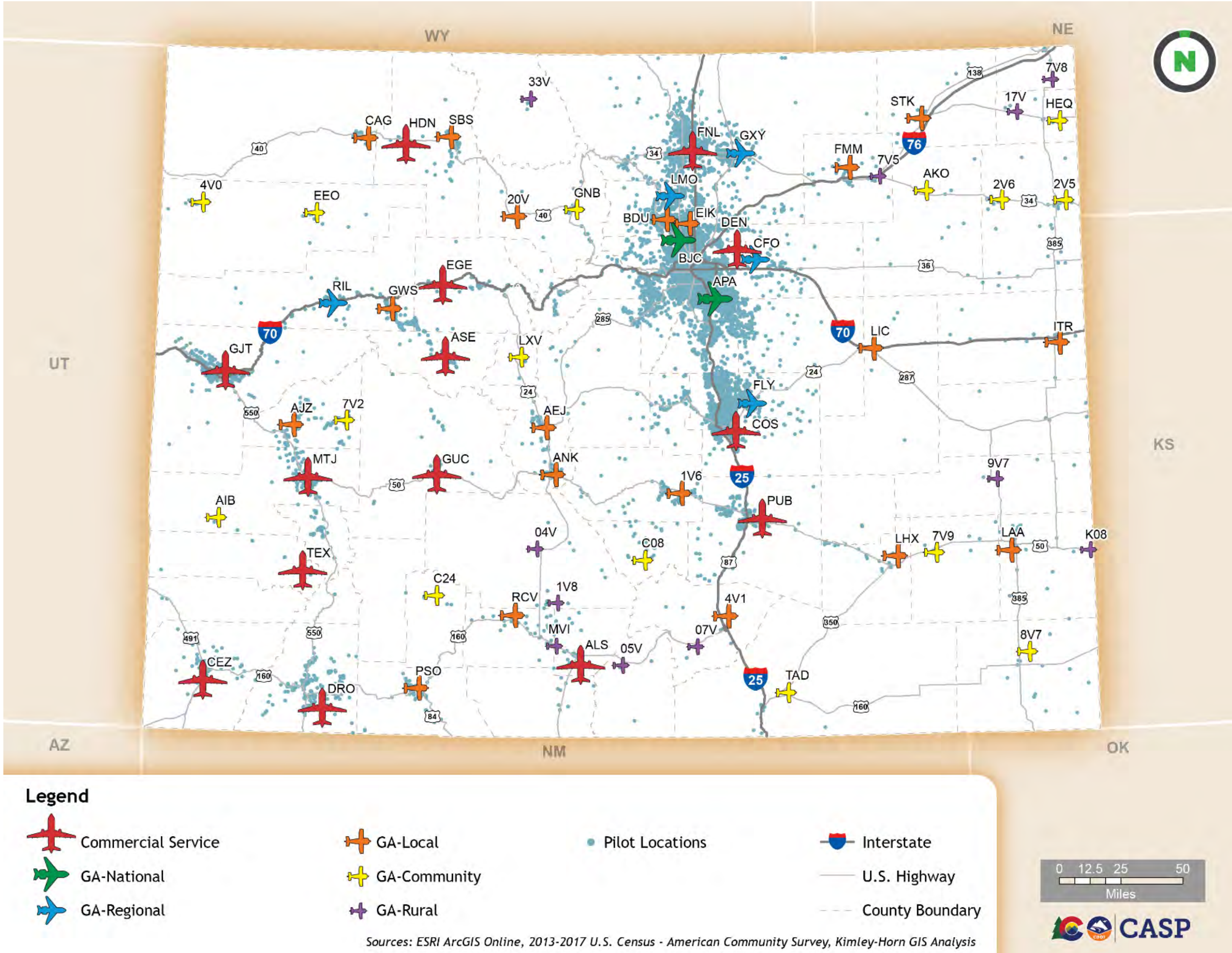


Source: 2018 Inventory & Data Form

6.5.2.3. Number of Colorado Pilots Per Capita

The number of pilots within a region or state can oftentimes give direction to the propensity of aviation demand, especially for GA activity. Because of this correlation, the number of Colorado registered pilots and their locations were pulled from FAA databases and mapped. Of the 18,094 registered pilots in Colorado as of October 2019, 12,586 (70 percent) are in Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, and Larimer counties. As illustrated in **Figure 6.49**, pilot density is most prevalent around the Denver and Colorado Springs areas.

Figure 6.49. Colorado Registered Pilots



6.6. Facility and Service Objectives

In addition to evaluating airport's capabilities and the system's performance based on the PMs and SIs, the 2020 CASP identified a series of facility and service objectives to guide development at system airports. The facility and service objectives are designed to provide guidance on the minimum level of development that airports should strive to achieve based on their role or function within the system as determined through their classification. Therefore, these objectives are not intended to be mandates or requirements, but recommended standards to help guide airports to optimally perform their roles within the system. In general, airports that serve larger, more sophisticated aircraft and support diverse aviation activities typically require more extensive services and facilities, while smaller airports with limited aircraft operations and activities necessitate fewer.

It is important to note that if an airport does not meet a particular objective it does not necessarily indicate a development or improvement project should be pursued. Instead, an airport should consider if its existing facilities and services accommodate current and anticipated needs during the master planning process or through discussions with CDOT Division of Aeronautics staff. From federal (i.e. FAA) and state (i.e. CDOT) perspectives, specific projects must be justified in an airport-specific study (e.g., master plan) and included on the ALP before funding can typically be considered. While the 2020 CASP provides the framework of statewide needs, airport-specific analyses are needed to determine the facilities and service objectives and related improvement projects appropriate for a specific airport.

The CASP facility and service objectives are presented in this section, and divided into the following categories:

6.6.1 Airfield facility objectives
6.6.2 Lighting/NAVAIDs facility objectives
6.6.3 Airport facility objectives
6.6.4 Service/Other objectives
6.6.5 Summary of Facility and Service Objectives

Each category is separated into its own subsection in the subsequent pages, and the subsections include a bar chart that indicates the status of each airport classification within a specific facility or service objective related to that category. A summary bar chart demonstrating the system-wide results for each objective concludes the facility and service objective section. Individual airport report cards were developed to depict each system airport's facility and service objectives status, comparing existing facilities and services to the objectives and noting where each airport achieved the objective. These report cards can be found in **Appendix B. Airport Report Cards**.

6.6.1. Airfield Facility Objectives

The airfield facility objectives include the components of an airport's facilities directly related to airfield pavements. Airfield facilities are a major component in an airport's ability to support aviation operations and statewide needs. The following airfield facilities were assessed for Colorado system airports, with specific objectives assigned for each airport's classification:

6.6.1.1 Airport Reference Code (ARC)
6.6.1.2 Primary Runway Length

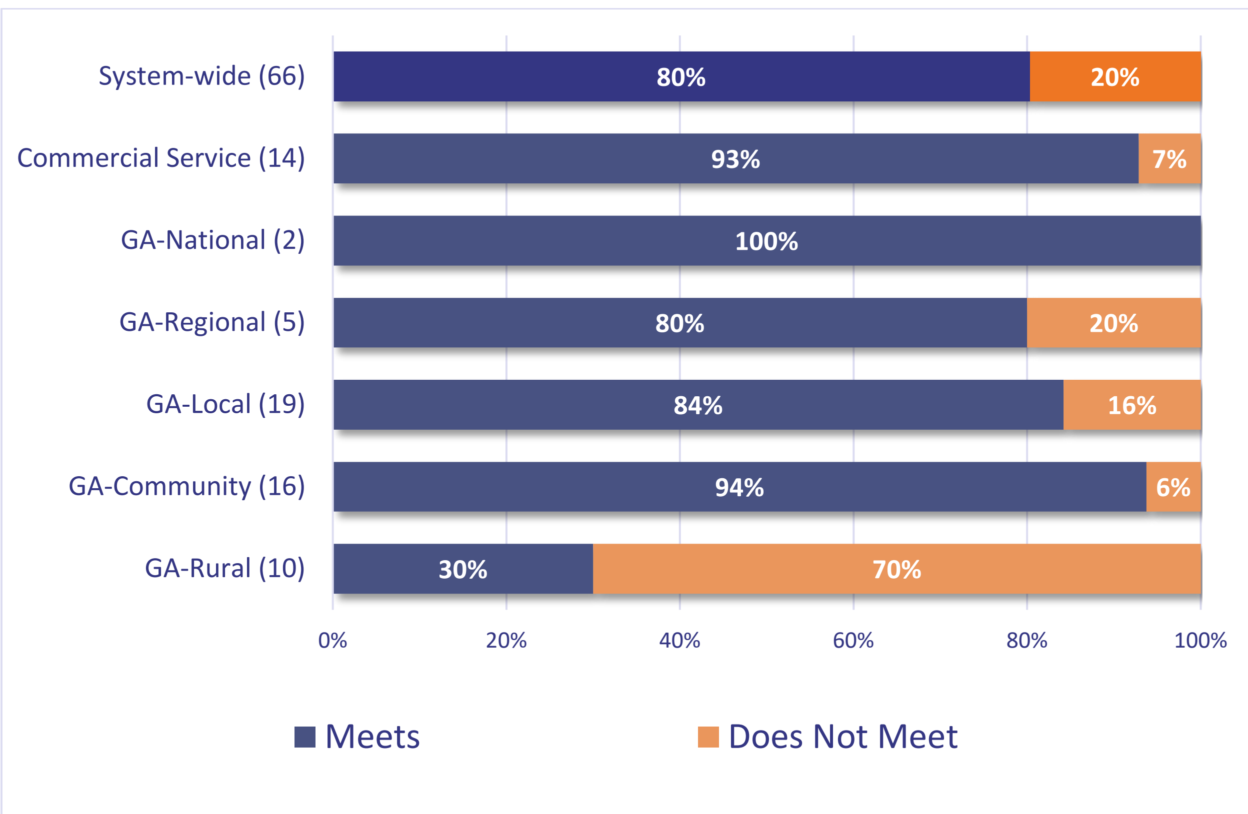
6.6.1.3 Primary Runway Width
6.6.1.4 Primary Runway Strength
6.6.1.5 Taxiway Type
6.6.1.6 Runway Markings

6.6.1.1. Airport Reference Code (ARC)

An airport's ARC is indicative of the most demanding aircraft that regularly operates at an airport. An airport's ARC denotes the primary runway's design code (RDC), or the specification such as runway length, width, separation distances, etc. that are critical for the safe operation of aircraft on the runway. Although the ARC is used for planning and design purposes, the FAA states that the ARC does not expressly limit the aircraft that may be able to operate safely on the airport. Due to the relationship between the ARC and an airport's primary RDC which dictates runway requirements, the ARC is included as an objective for each airport.

In total, 80 percent of the Colorado system meets its ARC objective relative to its classification. At least 80 percent of all airport classifications are meeting the ARC objective, with all GA-National airports meeting this objective, and GA-Rural airports as the outlier with only 30 percent of airports meeting the ARC objective. **Figure 6.50** summarizes ARC objective performance at Colorado system airports.

Figure 6.50. Percent of Airports by Classification Meeting ARC Objectives



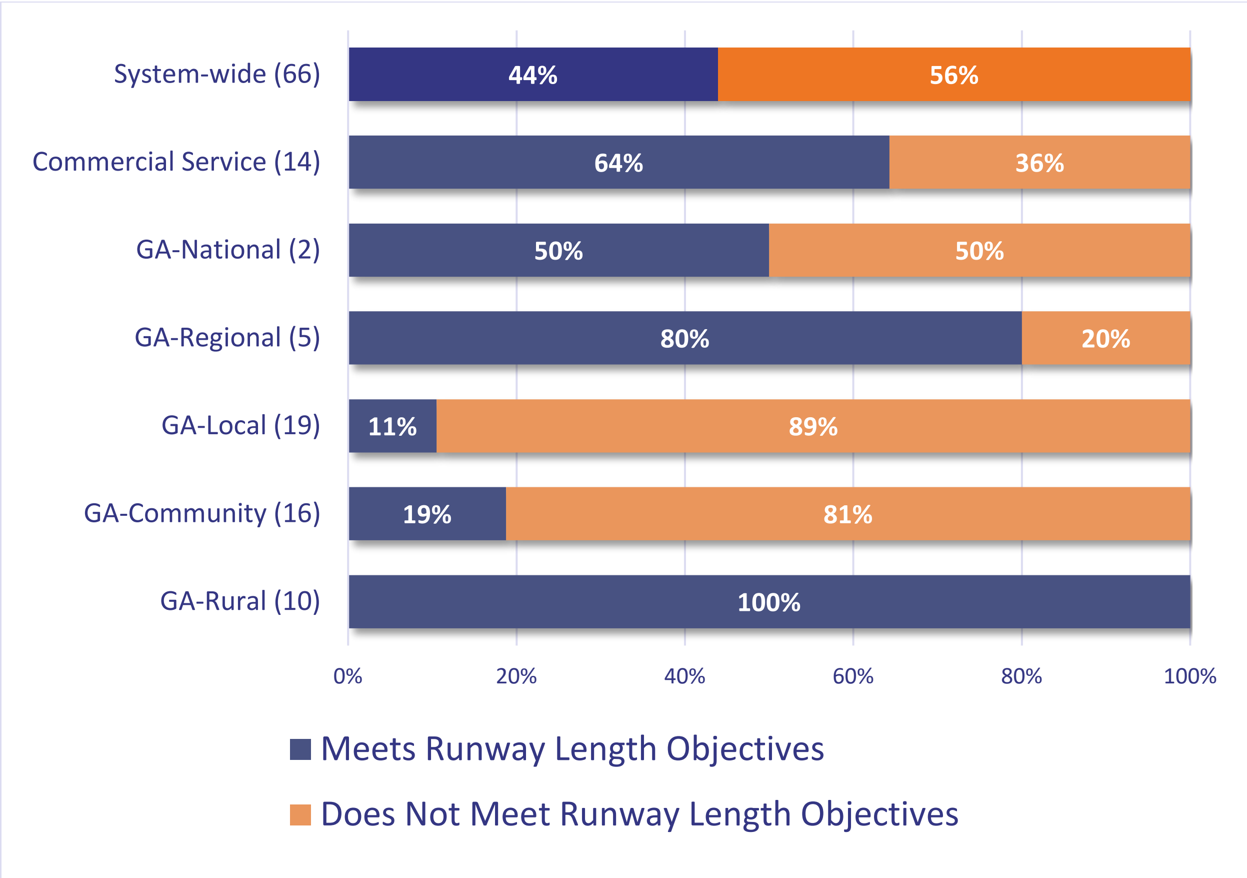
Source: 2018 Inventory & Data Form

6.6.1.2. Primary Runway Length

The length of the runway is one of the most important factors determining what types of aircraft can land at an airport. In general, longer runways allow for the operation of more demanding, high performance aircraft. Primary runway length objectives for Commercial Service, GA-National, and GA-Regional were determined using the runway lengths specified for the critical aircraft as reported in the airport's ALP or master plan. GA-Local and GA-Community runway length objectives were determined based on accommodation of 100 percent and 95 percent, respectively, of small aircraft adjusted for elevation and mean maximum daily temperature during the hottest month. The runway length analysis was conducted using Figure 2-1 in FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. The GA-Rural airports are recommended to maintain their existing runway lengths.

Figure 6.51 summarizes the runway length objective performance by airport classification. Sixty-four percent of Commercial Service airports met their primary runway length objective. One of the two GA-National airports did not meet their runway length objective. Eighty percent of GA-Regional airports met their runway length objective. Eleven percent of GA-Local and all GA-Rural airports meet their runway length objective. Overall, 44 percent of system airports meet their primary runway length objective.

Figure 6.51. Percent of Airports by Classification Meeting Primary Runway Length Objective



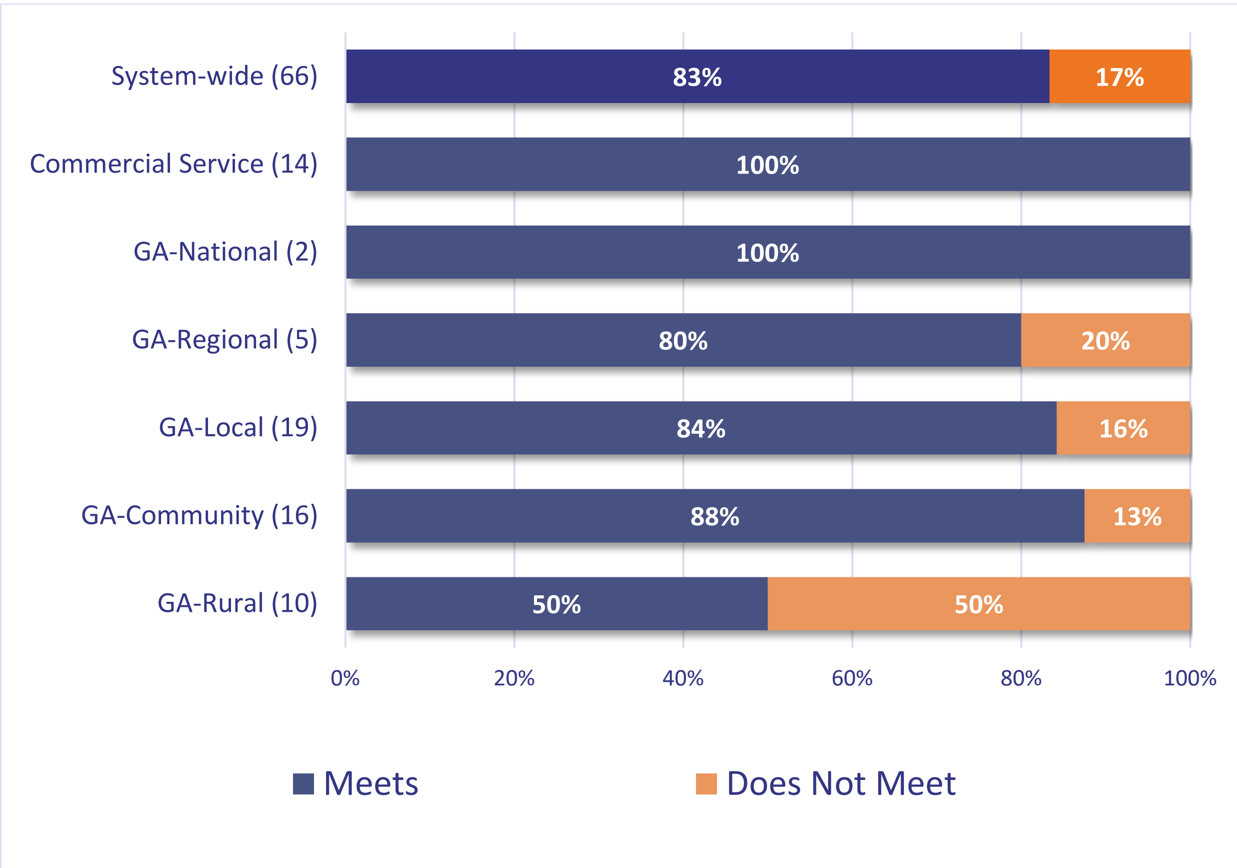
Source: 2018 Inventory & Data Form

6.6.1.3. Primary Runway Width

Runway width, similar to runway length, is an important component of maintaining safety standards at an airport. Primary runway width objectives vary between airport classifications and range from 150 feet wide for Commercial Service airports to 60 feet wide for GA-Rural airports.

Figure 6.52 summarizes the results of the primary runway width objective analysis by airport classification. System-wide, 83 percent of airports are meeting this objective. All Commercial Service and GA-National airports meet their primary runway width objective. All airport classifications, excluding GA-Rural, had 80 percent or more of their airports meeting the primary runway width objective. Fifty percent of GA-Rural airports meet the 60-foot wide objective.

Figure 6.52. Percent of Airports by Classification Meeting Primary Runway Width Objective



Source: 2018 Inventory & Data Form

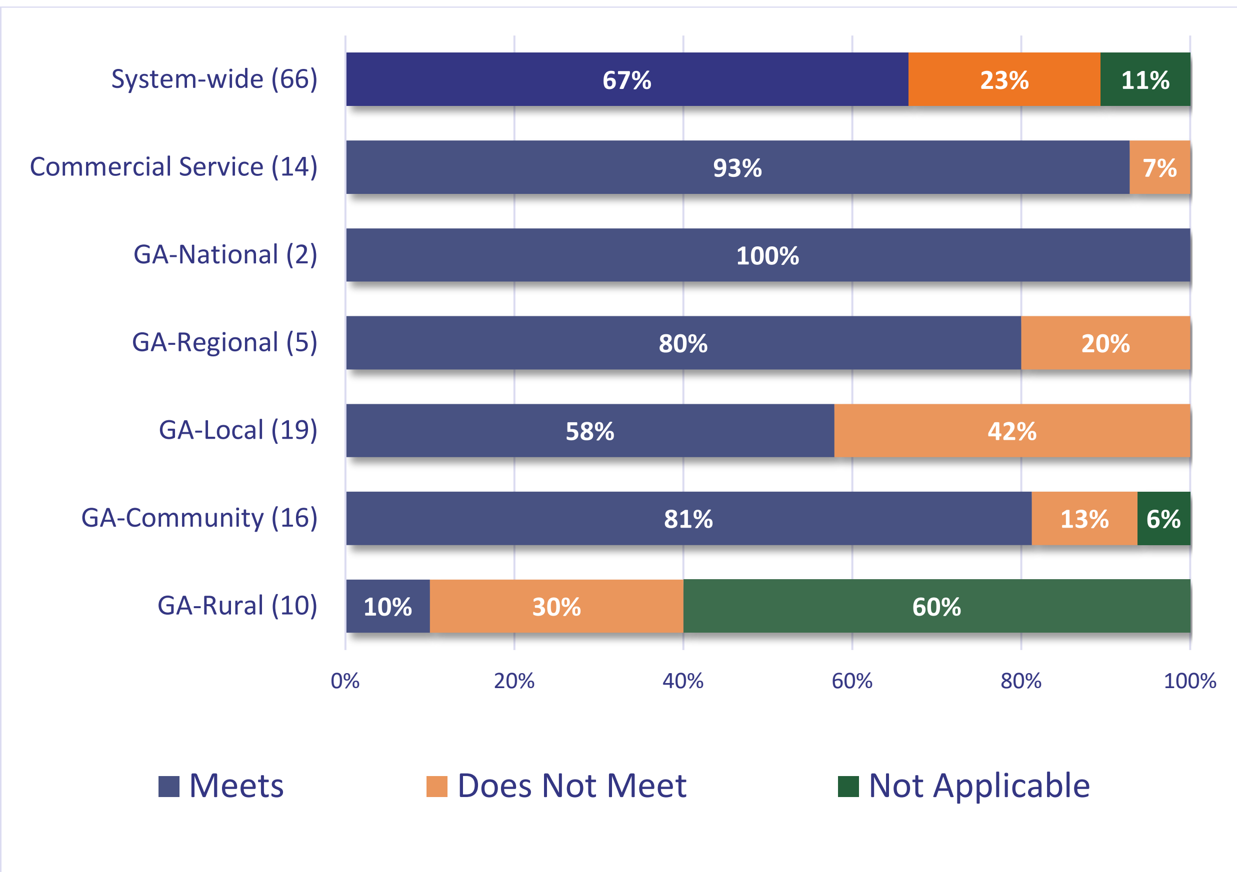
6.6.1.4. Primary Runway Strength

Runways are the most important facility at an airport and therefore should be strong enough to accommodate the most demanding, regular-use aircraft. It was determined that the objective for Commercial Service and GA National airports is 60,000 pounds, while GA-Regional and GA-Local have an objective of 30,000 pounds. GA-Community and GA-Local were assigned a runway strength objective of

12,500 pounds. For this analysis, only total weight was considered. Differentiation between single-wheel, dual wheel, and others was not included.

Figure 6.53 summarizes primary runway strength facility objective performance by airport classification. Overall, 67 percent of system airports are meeting their respective runway strength objective. Ninety-three percent of Commercial Service, 80 percent of GA-Regional, and 81 percent of GA-Community airports meet this objective at over 80 percent, with almost 60 percent of GA-Local airports achieving the objective. One hundred percent of GA-National airports meet their respective runway strength objectives. Ten percent of GA-Rural airports are meeting their runway strength objective. This objective does not apply to the three GA-Rural airports with turf runways. Three GA-Rural airports and one GA-Community airport did not provide runway strength data. The airports with turf runways or that did not provide runway strength data resulted in a “not applicable” outcome for this objective.

Figure 6.53. Percent of Airports by Classification Meeting Primary Runway Strength Objectives



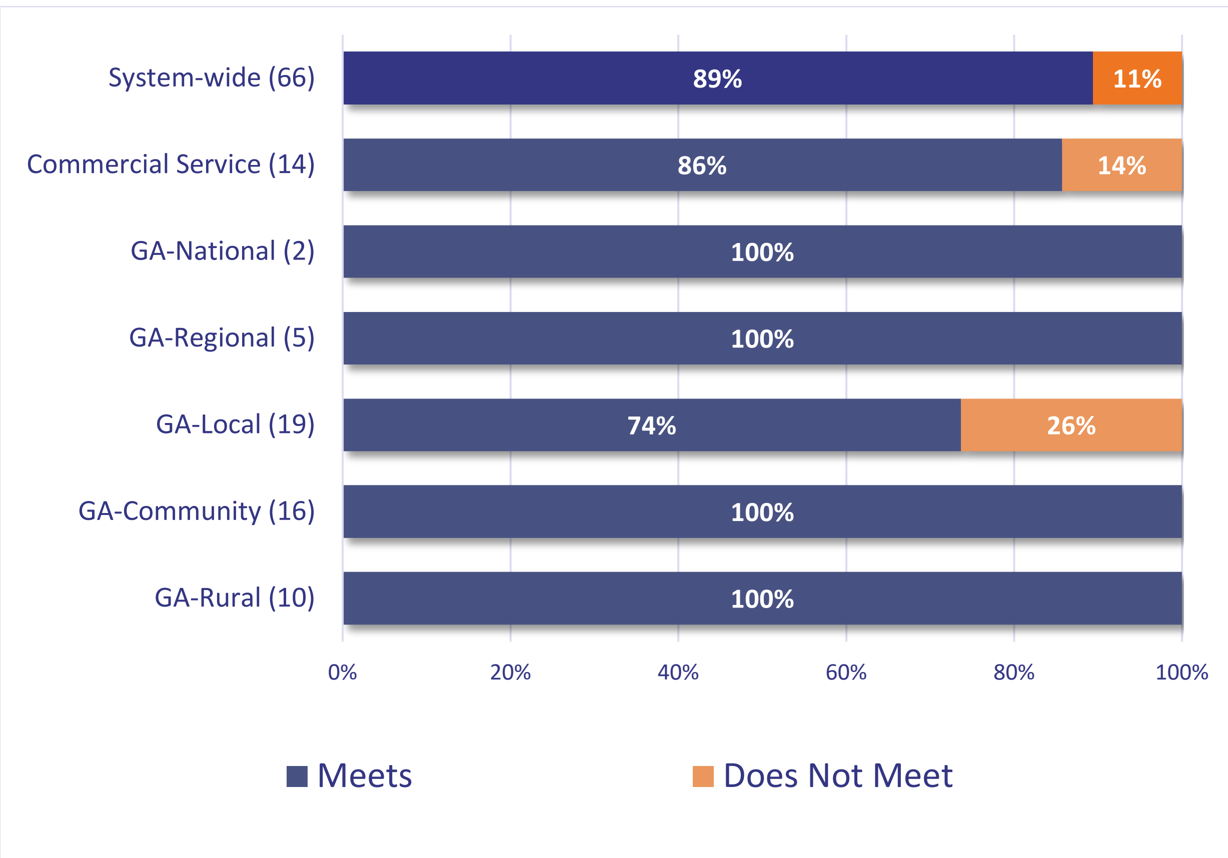
Source: 2018 Inventory & Data Form

6.6.1.5. Taxiway Type

At the most basic level, taxiways are constructed to facilitate aircraft movements between the runways and aircraft parking areas. However, as airports take on more substantial activity volumes, taxiways also become necessary to improve operational efficiency and safety. As mentioned in **Chapter 2. Inventory of System Condition**, there are four types of taxiways that exist at CASP airports. For this objective, Commercial Service, GA-National, and GA-Regional airports were assessed by the existence of a full parallel taxiway, while GA-Local airports were assessed for availability of partial-parallel taxiways, and GA-Community in the form of a turn-around taxiway. GA-Rural airports have an objective to maintain their existing taxiway type. Taxiway types for this analysis refer to the airport's primary taxiway only.

Figure 6.54 summarizes taxiway type objective performance by airport classification. System-wide, 89 percent of system airports meet their taxiway facility objective relative to classification. All GA-National, GA-Regional, GA-Community and GA-Rural airports meet the objective, while 74 percent of GA-Local airports met the taxiway type objective. Eighty-six percent of Commercial Service airports are meeting their objective.

Figure 6.54. Percent of Airports by Classification Meeting Taxiway Objectives

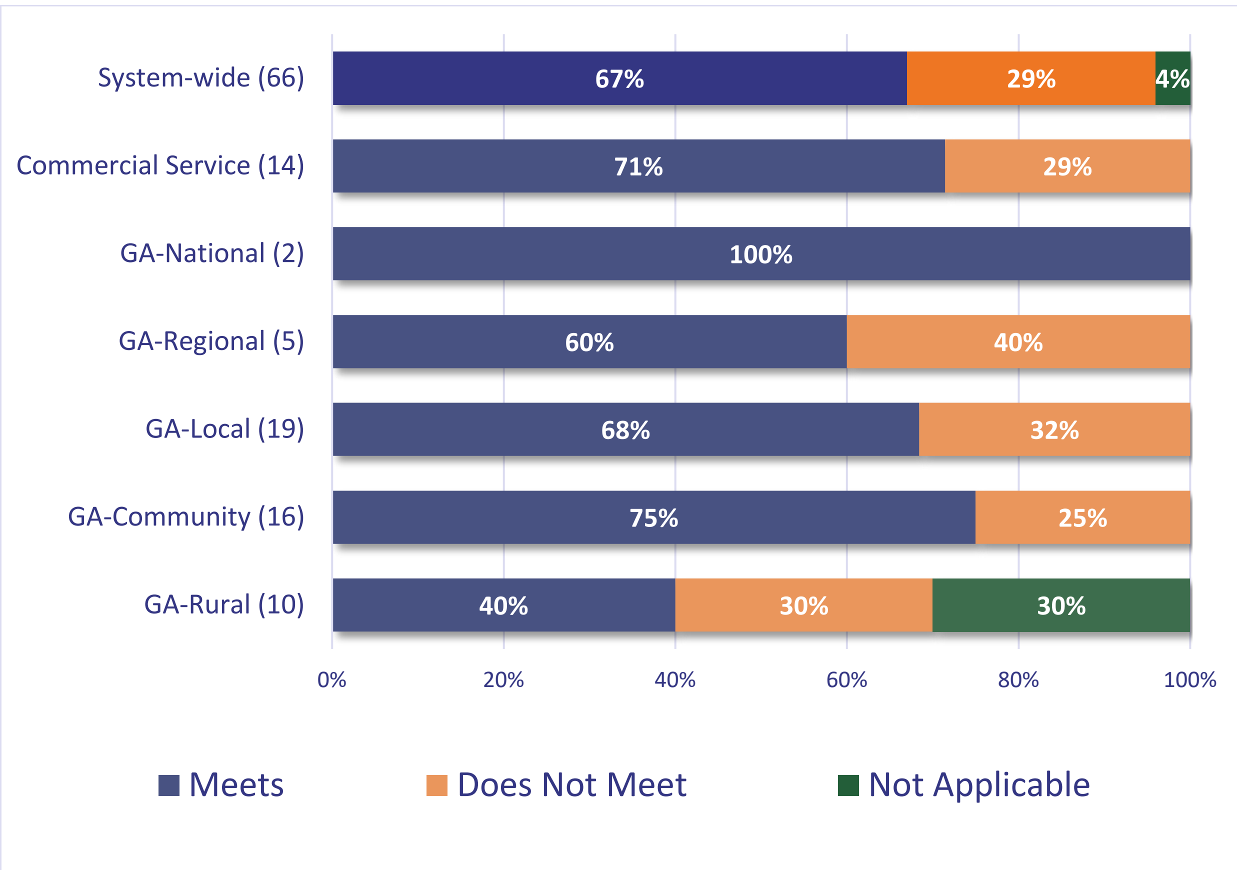


Source: 2018 Inventory & Data Form

6.6.1.6. Runway Markings

Runway marking objectives were chosen in association with the approach type. Precision runway markings should be present at Commercial Service and GA-National airports. Non-precision runway markings are the objective for GA-Regional, GA-Local, and GA-Community airports, while the GA-Rural objective is for basic runway markings. **Figure 6.55** summarizes runway marking objective performance by airport classification. Overall, 67 percent of system airports meet their respective runway markings objective. Sixty percent of GA-Regional airports meet their objective. Three GA-Rural airports have unpaved runways and therefore are not applicable to the analysis. All GA-National airports are meeting their runway markings objective. Commercial Service and GA-Community airports are meeting this objective at 71 percent and 75 percent, respectively. It should be noted that some airports may not meet the objective for runway markings because they don't have the approach type associated with the airport's classification.

Figure 6.55. Percent of Airports by Classification Meeting Runway Markings Objective



Source: 2018 Inventory & Data Form

6.6.2. Lighting/NAVAIDs Facility Objectives

The lighting and NAVAIDs facility objectives represent a selection of important assets an airport can acquire that improve the operational safety of their facility. The following airside lighting/NAVAIDs were assessed for Colorado system airports, with specific objectives assigned for each airport's classification:

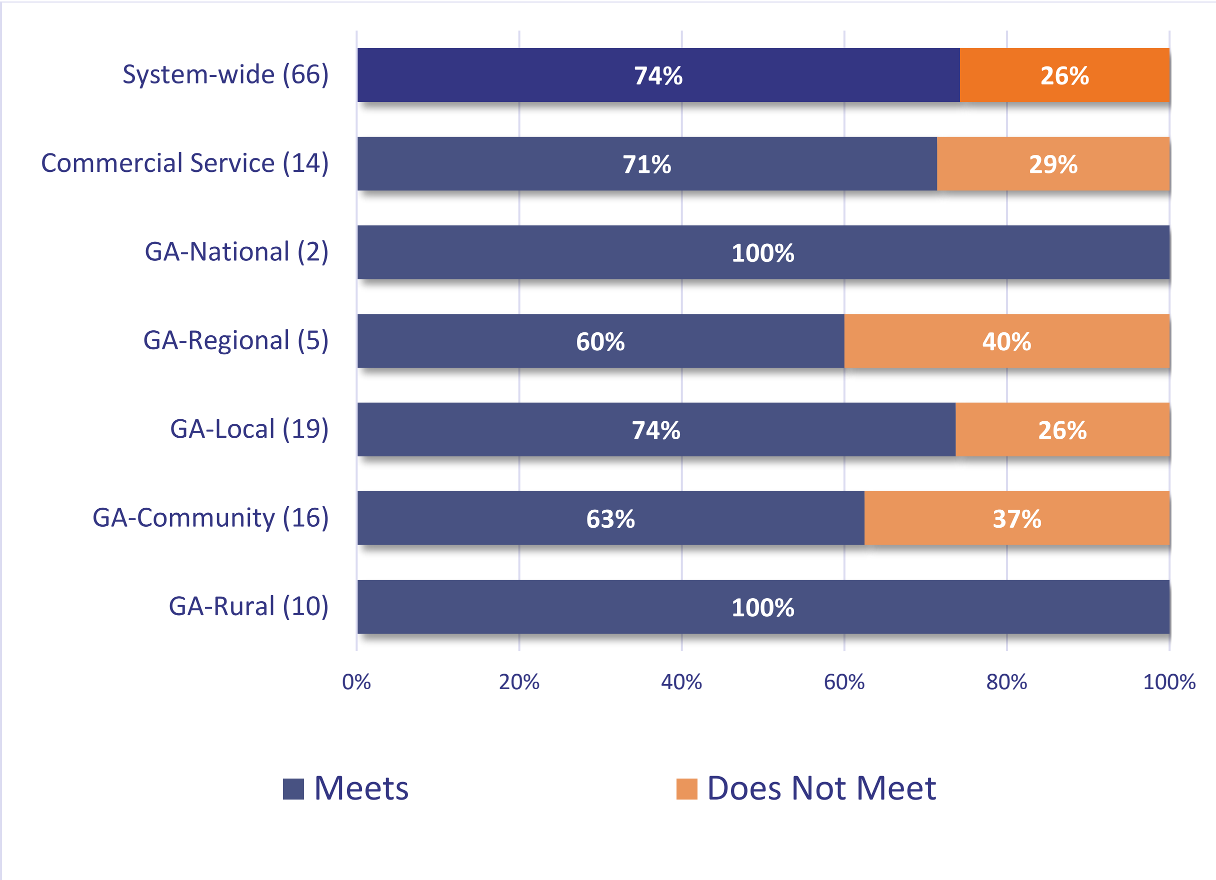
6.6.2.1 Primary Approach
6.6.2.2 Visual Aids
6.6.2.3 Primary Runway Lighting
6.6.2.4 Weather Reporting

6.6.2.1. Primary Approach

The primary approach objective distinguishes between airport classifications in terms of precision, non-precision with vertical guidance, and non-precision approach procedures. GA-Rural airports have the objective to maintain the existing approach type. A precision approach is the objective for Commercial Service and GA-National airports, while the objective for GA-Regional airports is to have a non-precision approach with vertical guidance. Both the GA-Local and GA-Community airport classifications have a non-precision approach objective.

Figure 6.56 summarizes primary approach objective performance across Colorado system airports. System-wide, 74 percent of CASP airports are meeting this objective, with 100 percent of GA-National and GA-Rural airports meeting their approach type objectives. Airports within the GA-Regional and GA-Community classifications are meeting their approach objectives at 60 percent and 63 percent respectively. Approximately 71 percent of Commercial Service and 74 percent of GA-Local airports are meeting their respective approach type objectives for the approach to their primary runway.

Figure 6.56. Percent of Airports by Classification Meeting Primary Approach Objective

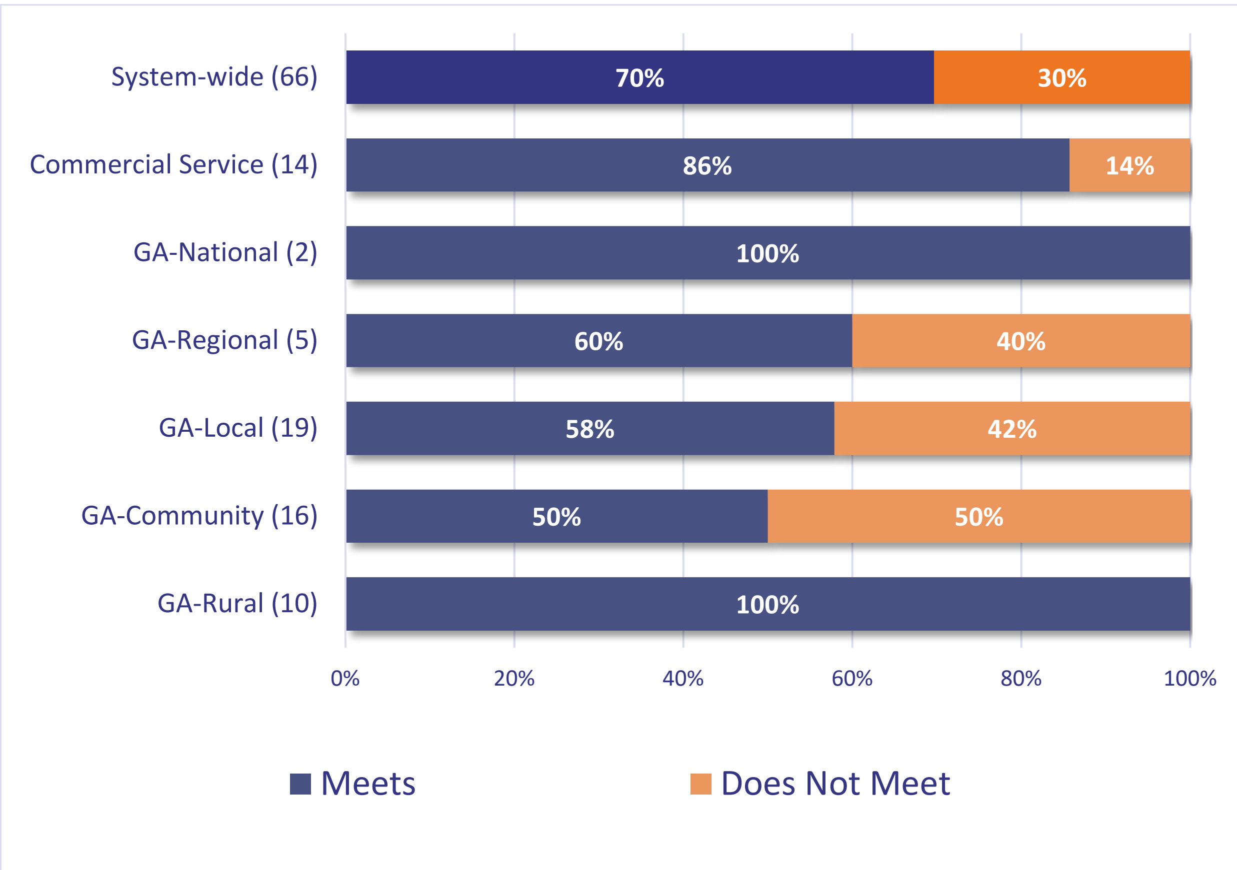


Source: 2018 Inventory & Data Form

6.6.2.2. Visual Aids

Figure 6.57 summarizes visual aid objective performance for CASP airports by airport classification. Seventy percent of airports in the Colorado system are meeting their respective objective, with GA-National and GA-Rural meeting their objectives at 100 percent. The airport classification with the lowest percentage of airports meeting the visual aids objective is the GA-Community classification, with 50 percent. Approximately 60 percent of GA-Regional airports, and 58 percent of GA-Local airports are meeting this objective, while 86 percent of Commercial Service airports are meeting their visual aids objective.

Figure 6.57. Percent of Airports by Classification Meeting Visual Aids Objective

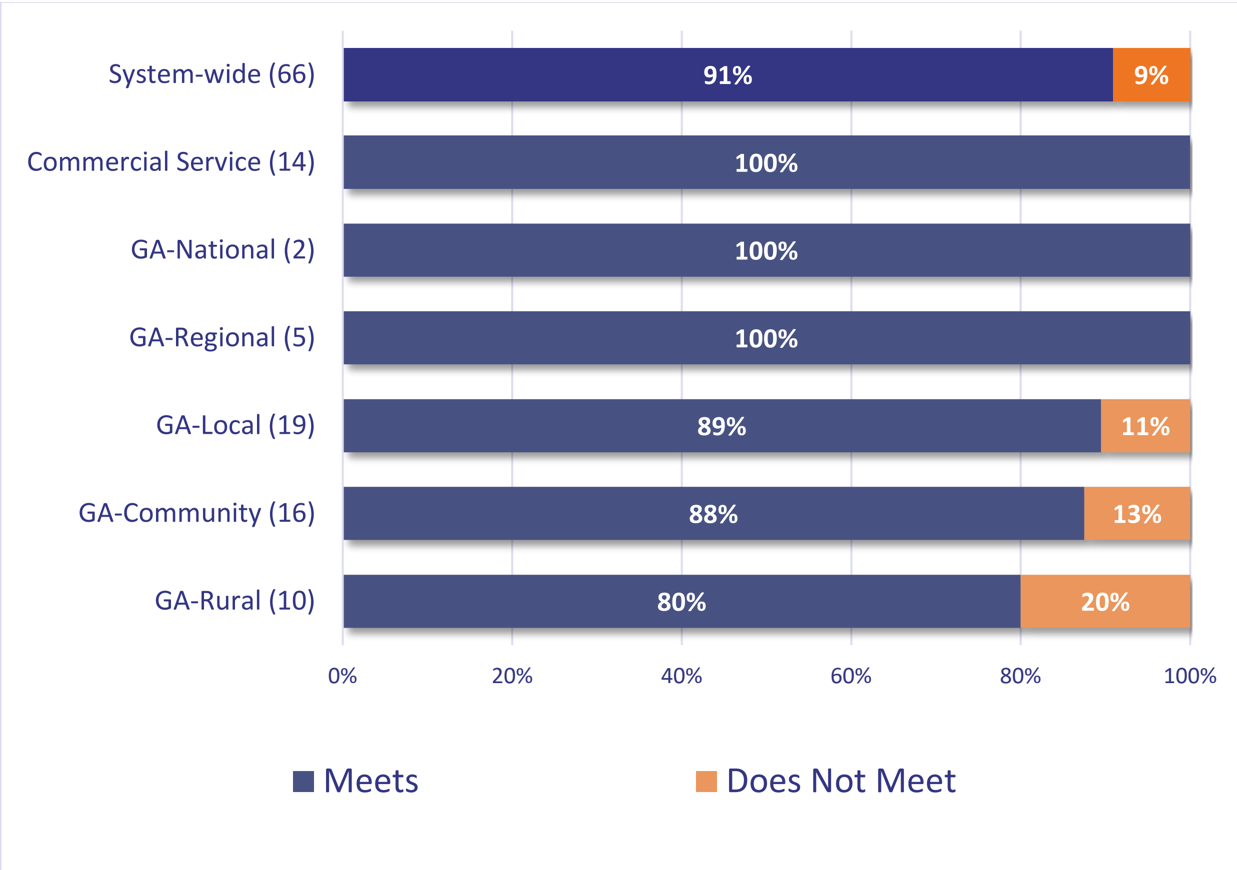


Source: 2018 Inventory & Data Form

6.6.2.3. Primary Runway Lighting

Runway lighting is necessary for night-time operations on the primary runway and is separated into three classifications based on brightness. The runway lighting objective recommended for Commercial Service and GA-National on their primary runway is to have high intensity runway lighting (HIRL) or medium intensity runway lighting (MIRL). GA-Regional, GA-Local, and GA-Community are recommended to have MIRL, while the GA-Rural airports need reflectors to meet their primary runway lighting objective. **Figure 6.58** summarizes primary runway lighting objective performance by CASP classification. Overall, the system has 91 percent of airports meeting their recommended primary runway lighting objective, with Commercial Service, GA-National, and GA-Regional having 100 percent of their airports meeting this objective. Eighty-nine percent of GA-Local airports, and 80 percent of GA-Rural airports are meeting their runway lighting objective, with GA-Community at 88 percent.

Figure 6.58. Percent of Airports by Classification Meeting Primary Runway Lighting Objective



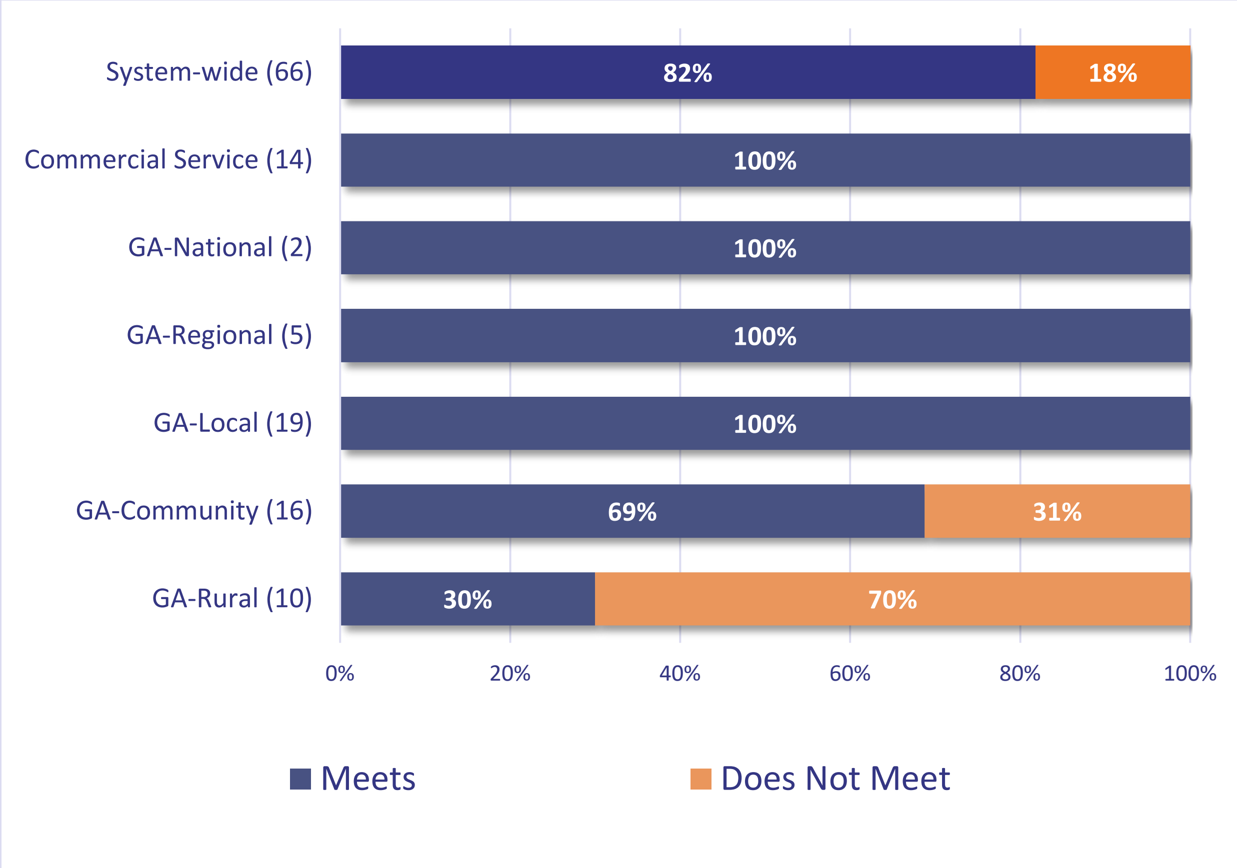
Source: 2018 Inventory & Data Form

6.6.2.4. Weather Reporting

The final visual aid component to be included as a CASP facility and service objective is the presence of weather reporting equipment. The objectives for Commercial Service, GA-National, and GA-Regional airports is to have an on-site ASOS or AWOS, while GA-Local and GA-Community airports should at least have an automated Unicom. GA-Rural airports are considered meeting the objective if they have at least a non-certified weather-reporting system.

Figure 6.59 summarizes the performance of the weather reporting objectives for all CASP airport classifications. Eighty-two percent of all CASP airports are meeting their respective weather reporting objective. All the CASP airport classifications, except for GA-Community and GA Rural airports, are meeting this objective at 100 percent. Sixty-nine percent of GA-Community airports and 30 percent of GA-Rural airports are meeting their weather reporting objective.

Figure 6.59. Percent of Airports by Classification Meeting Weather Reporting Objective



Source: 2018 Inventory & Data Form

6.6.3. Airport Facility Objectives

Airport facilities are important elements of an airport's attractiveness to users and can determine the usage and capacity of an airport. In addition, airport facilities can promote safety, including promoting security through fencing, and include facilities such as a Maintenance/SRE building that can support airport and aircraft maintenance needs. Also, of interest to many is the provision of storage facilities for aircraft and cars, especially electric vehicles as they continue to grow in popularity. This section looks more closely at the follow airport facilities present at Colorado system airports:

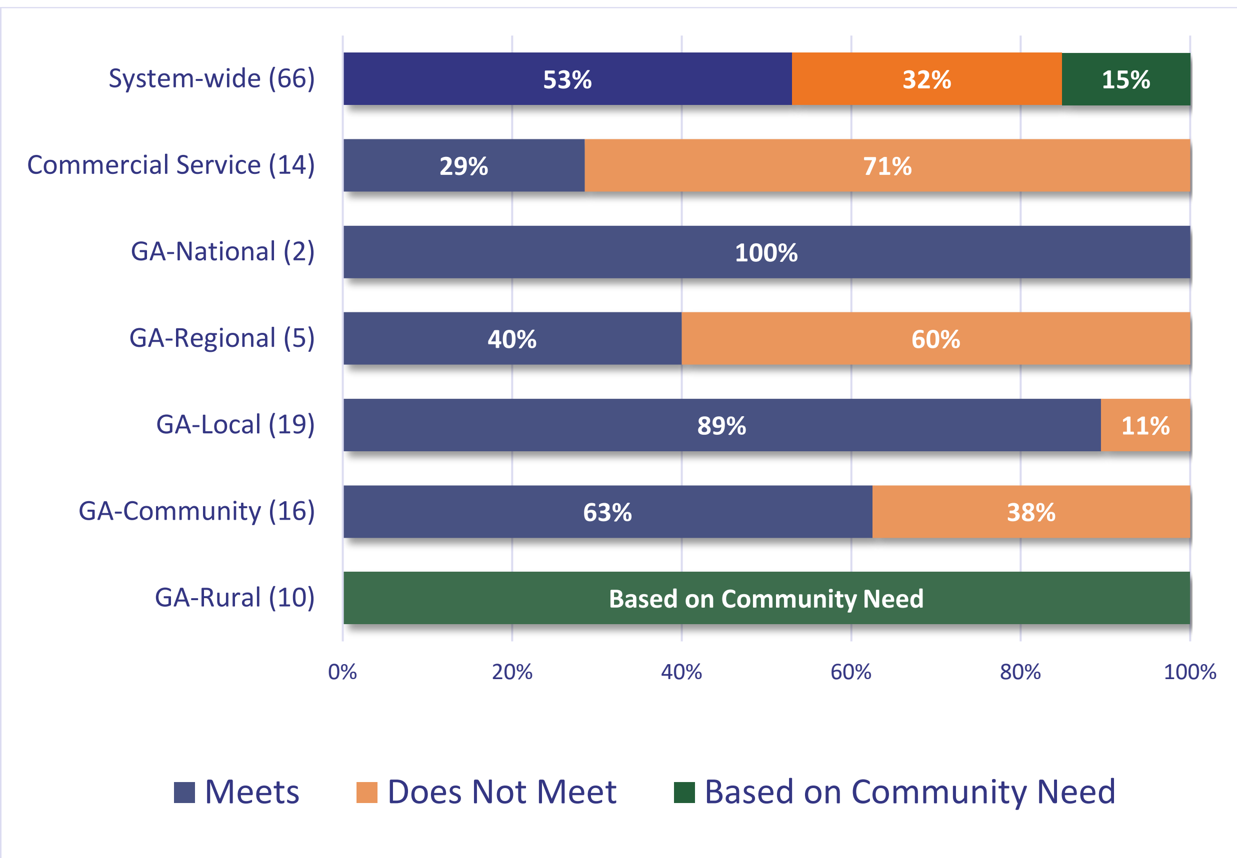
6.6.3.1 Terminal Capacity (Commercial Service and GA)
6.6.3.2 Apron Tie-Downs
6.6.3.3 Hangars
6.6.3.4 Maintenance/SRE Building
6.6.3.5 Electric Vehicle Charging Stations
6.6.3.6 Perimeter Security

6.6.3.1. Terminal Capacity (Commercial Service and GA)

An airport's terminal capacity is a strong indicator of activity levels and can demonstrate if the airport is being under or over utilized. Since the activity levels and needs across airport classifications are so different, the recommended terminal capacity levels are also varied. Earlier in this chapter, terminal capacities for commercial service airports were calculated using standards set by ACRP Report 25 to determine the minimum terminal square footage based on the number of gates present at the airport. Terminal capacities for GA airports used the methodology found in ACRP Report 113 to determine the acceptable ratio of 150 sq. ft. per peak hour number of passengers. An acceptable ratio of terminal square footage is not a part of the terminal capacity objective for GA-Regional, GA-Local, and GA-Community. Instead, the objective for these airport classifications focuses on terminal amenities such as: restrooms, flight planning space, Wi-Fi availability, and a rest area. Airports in these classifications can meet the terminal capacity objective if the airport has all of those terminal amenities. GA-Rural airports do not have a specific objective for their terminal capacity, but their development should coincide with community needs.

Figure 6.60 summarizes terminal capacity objective performance for all CASP airports. System-wide, 53 percent of airports are meeting their respective terminal capacity objective. Twenty-nine percent of Commercial Service, 100 percent of GA-National, and forty percent of GA-Regional airports are meeting this objective. GA-Local airports are meeting at 89 percent and GA-Community airports are in the middle of the range with 69 percent of airports meeting the terminal capacity objective. The objective for GA-Rural airports is based on community need.

Figure 6.60. Percent of Airports by Classification Meeting Terminal Capacity Objective

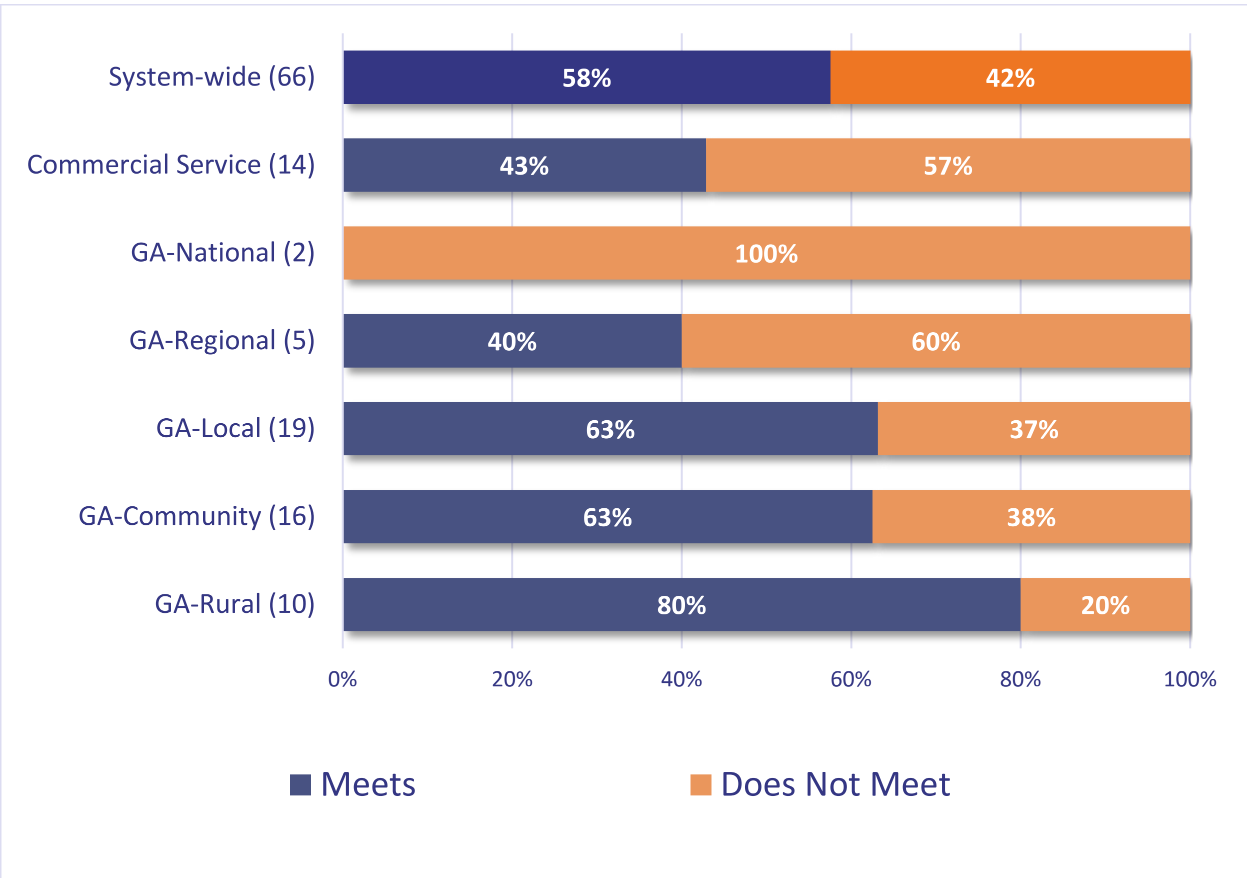


Sources: 2018 Inventory & Data Form; Individual Airport Master Plans; Google Earth; ACRP Report 25; ACRP Report 113, 2014

6.6.3.2. Apron Tie-Downs

Apron tie-down objectives for all airport classifications, excluding GA-Rural airports, are based on the number of tie-downs for a percentage of the airport's based aircraft fleet and a percentage of the weekly average overnight transient storage during peak season. GA-Rural airports meet their objective if they have tie-downs for 100 percent of their based aircraft fleet. The percentage considered for based aircraft and weekly transient overnight fleet changes based on classification. It is important to note that many airports provide more covered storage in the form of hangars due to aircraft owner preference, space, weather, or other factors. Other airports do not have the financial capability to provide as many hangars and rely on apron tie-downs for both based and transient aircraft. **Figure 6.61** summarizes apron tie-down objective performance across CASP airports. Overall, 58 percent of system airports are meeting their respective objective. Neither of the GA-National airports are meeting this objective as apron tie-downs are not their primary form of aircraft storage. Sixty-three percent of both GA-Local and GA-Community airports are meeting this objective, with 43 percent of Commercial Service airports meeting. Eighty percent of GA-Rural airports are meeting their apron tie-down objective.

Figure 6.61. Percent of Airports by Classification Meeting Apron Tie-Downs Objective



Source: 2018 Inventory & Data Form

6.6.3.3. Hangars

Hangars, like apron tie-downs, are an essential part of any airport's facilities. It is important that airports can provide adequate facilities for parking and storing aircraft, for both based and transient fleets. The amount of covered storage or parking needed at each airport can depend on several factors, including airport activities, the volume of operations, climate, and an operator's desire for security.

The objectives for hangar space are written similarly to the apron-tie down objectives, as it considers both based aircraft and the weekly overnight transient fleet. Commercial Service airports were measured using 80 percent of their based aircraft fleet, while GA-National and GA-Regional airports were measured using 60 percent of based aircraft fleet. GA-Local and GA-Community airports were measured using 50 percent and 40 percent of based aircraft and transient fleet, respectively. The 2018 Inventory & Data Form asked airports to provide the number of weekly transient overnight aircraft at their facility, and a percentage of that number was used to analyze the transient aircraft component of the hangar objective. Fifty percent of weekly transient overnight aircraft was used for Commercial Service, GA-National, and GA-Regional airports, while 25 percent was used for GA-Local airports. The objective for GA-Community and GA-Rural airports are to provide hangars at their facilities based on community need. A summary of these percentage breakdowns used to analyze adequate hangar space for based and transient aircraft by airport classification is shown below in **Table 6.9**.

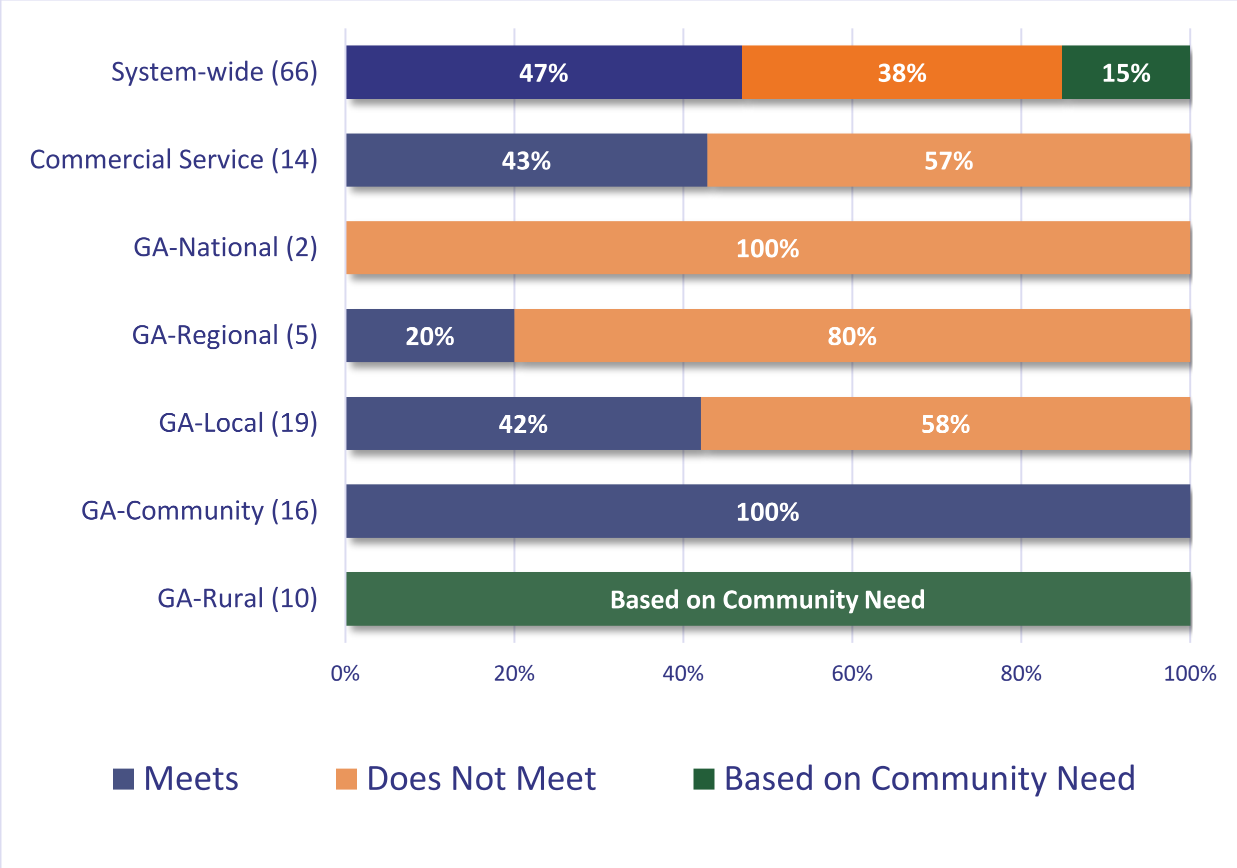
Table 6.9. Summary of Percentages Used to Measure Hangar Space by Airport Classification

Airport Classification	Percentage of Based Aircraft Used to Measure Hangar Objective	Percentage of Transient Aircraft Used to Measure Hangar Objective
Commercial Service	80%	50%
GA-National	60%	50%
GA-Regional	60%	50%
GA-Local	50%	25%
GA-Community	40%	Based on community need
GA-Rural	Based on community need	Based on community need

Source: 2020 CASP Facility and Service Objectives

Figure 6.62 summarizes the percentage of airports by classification meeting the hangar objectives. Forty-seven percent of airports system-wide are meeting their respective hangar objectives. Commercial Service, GA-Regional, and GA-Local have between 20 and 43 percent of their airports meeting this objective. One hundred percent of GA-Community airports are meeting their hangar objectives. Neither of the GA-National airports reported having adequate hangar space for based and transient aircraft, resulting in 100 percent of GA-National airports not meeting this objective. Hangar objectives for GA-Rural airports is based on community need.

Figure 6.62. Percent of Airports by Classification Meeting Hangar Objective



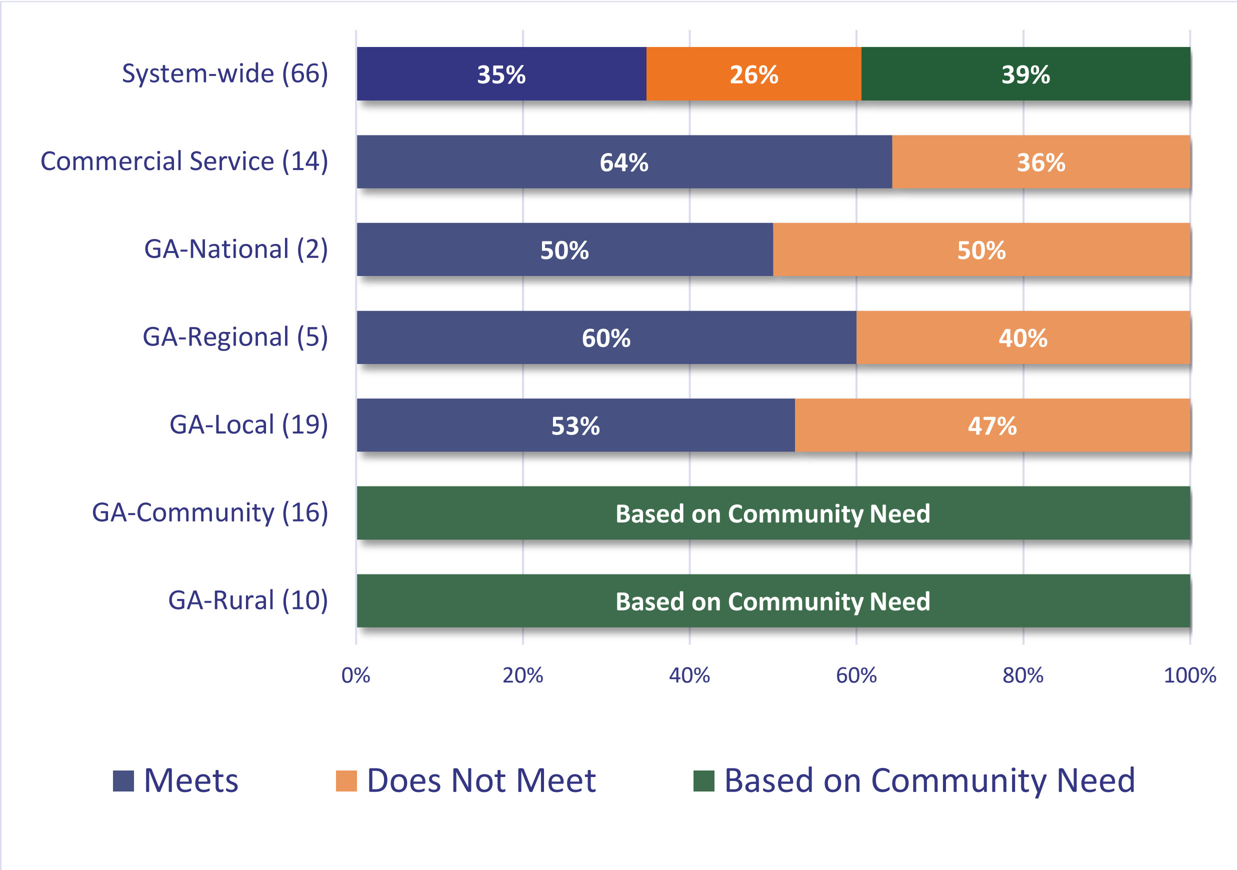
Source: 2018 Inventory & Data Form

6.6.3.4. Maintenance/Snow Removal Equipment (SRE) Storage Building

Maintenance and/or snow removal equipment (SRE) storage buildings are a crucial asset for many Colorado airports, especially during the challenging winter season. It is recommended that a maintenance/SRE storage building, whether standalone or combined in a single facility, be present at all Commercial Service, GA-National, GA-Regional, and GA-Local airports. GA-Community and GA-Rural airports are recommended to have a maintenance/SRE storage building at their facility based on community need.

Figure 6.63 summarizes maintenance/SRE storage building objective performance for all CASP airports by classification. System-wide 35 percent of airports are meeting the maintenance/SRE storage building objective for their classification. Sixty-four percent of Commercial Service airports are meeting the objective. Approximately 50 percent of airports in both GA-National and GA-Local classifications are meeting this objective, with 60 percent of GA-Regional airports meeting. All GA-Community and GA-Rural airports objectives are based on community need.

Figure 6.63. Percent of Airports by Classification Meeting Maintenance/SRE Storage Building Objective

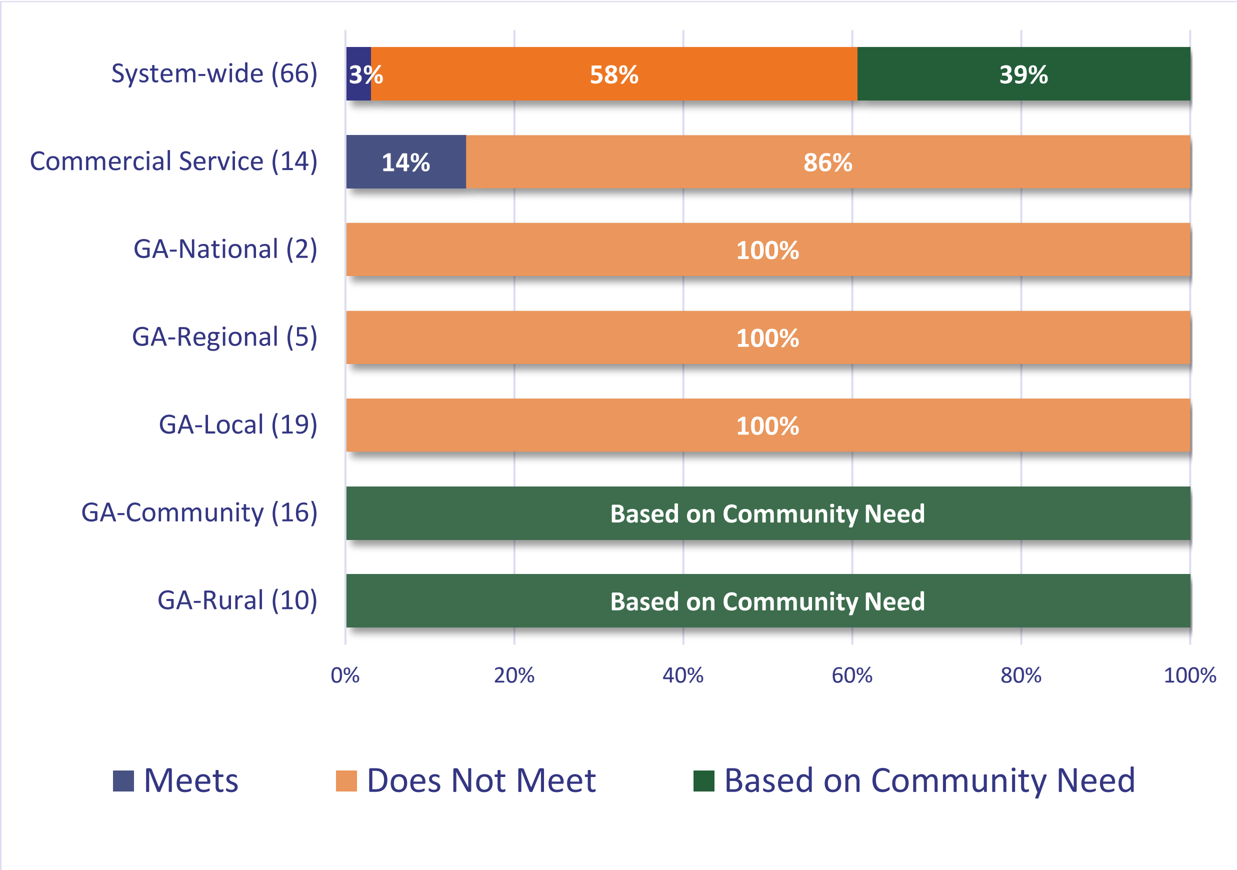


Source: 2018 Inventory & Data Form

6.6.3.5. Electric Vehicle Charging Stations

As electric vehicle proliferation continues, and personal electric vehicle ownership rises, it will be important for airports to accommodate these changes. For that reason, the CASP objectives for Commercial Service, GA-National, GA-Regional and GA-Local airports are to have electric vehicle charging stations. Electric vehicle charging stations objectives for GA-Community and GA-Rural airports are based on community need. Since personal electric vehicle usage is an emerging transportation solution, there are many airports within the system that have not caught up to the growing trend. It should be noted airports are considered to meet the objective if they have at least one existing electric vehicle charging station. **Figure 6.64** summarizes electric vehicle charging station objective performance across airport classifications. Of the airports whose objectives were to provide these facilities, only 14 percent of commercial airports report having electric vehicle charging stations. These make up the three percent of airports system-wide that meet the objective.

Figure 6.64. Percent of Airports by Classification Meeting Electric Vehicle Charging Station Objective

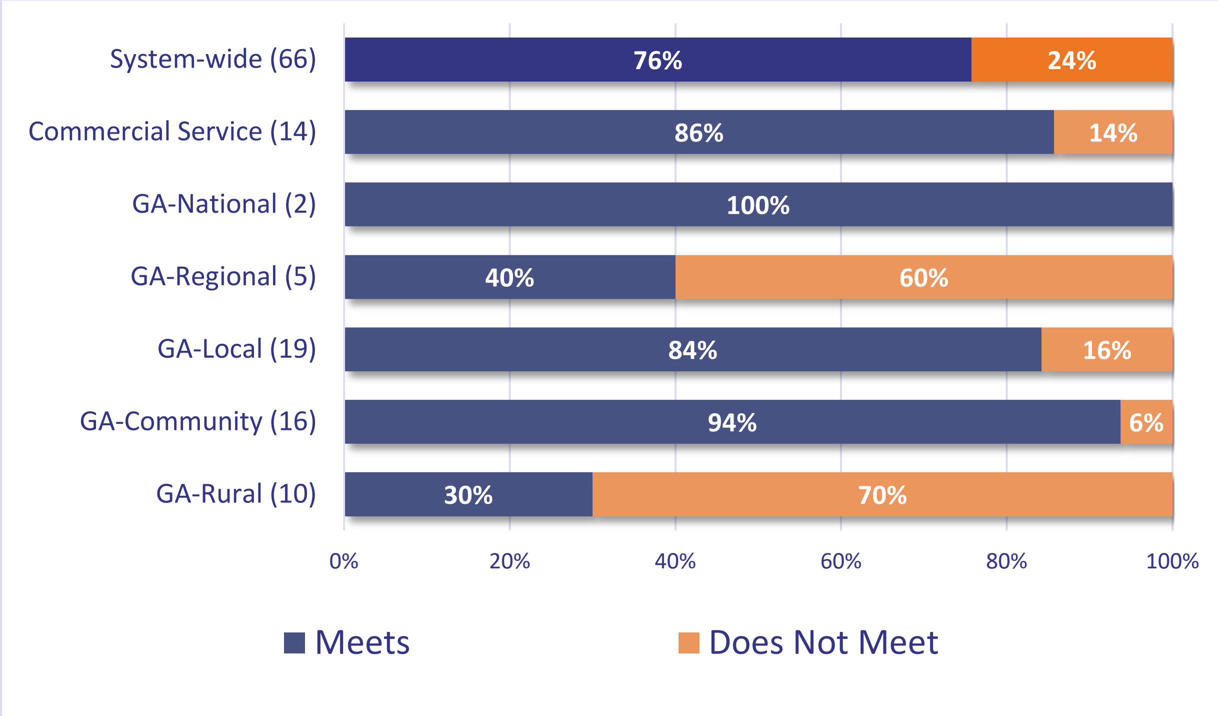


Source: 2018 Inventory & Data Form

6.6.3.6. Perimeter Security

Perimeter security needs vary across CASP airport classifications. It is recommended that full perimeter fencing with security gates and appropriate signage exist at all Commercial Service, GA-National, and GA-Regional airports. Airports within the GA-Local, GA-Community, and GA-Rural classifications are recommended to have 3-wire fencing with appropriate signage around the aircraft operating area (AOA). **Figure 6.65** summarizes perimeter security objective performance for CASP airports. Across Colorado system airports, 76 percent of airports meet their perimeter security objective. Commercial Service and GA-Community airports have 86 and 94 percent of airports meeting this objective, respectively. Eighty-four percent of GA-Local and 100 percent of GA-National airports are meeting this objective. Thirty percent of GA-Rural airports have adequate fencing at their facility and 40 percent of GA-Regional airports meet this objective.

Figure 6.65. Percent of Airports by Classification Meeting Perimeter Security Objective



Source: 2018 Inventory & Data Form

6.6.4. Service/Other Objectives

Airports can have a variety of other amenities or services available to users that improve the quality of the pilot and passenger experience. These other services promote airport activity and attract more users by offering fuel access, courtesy cars, and other amenities. CASP airports are assessed on the following service objectives:

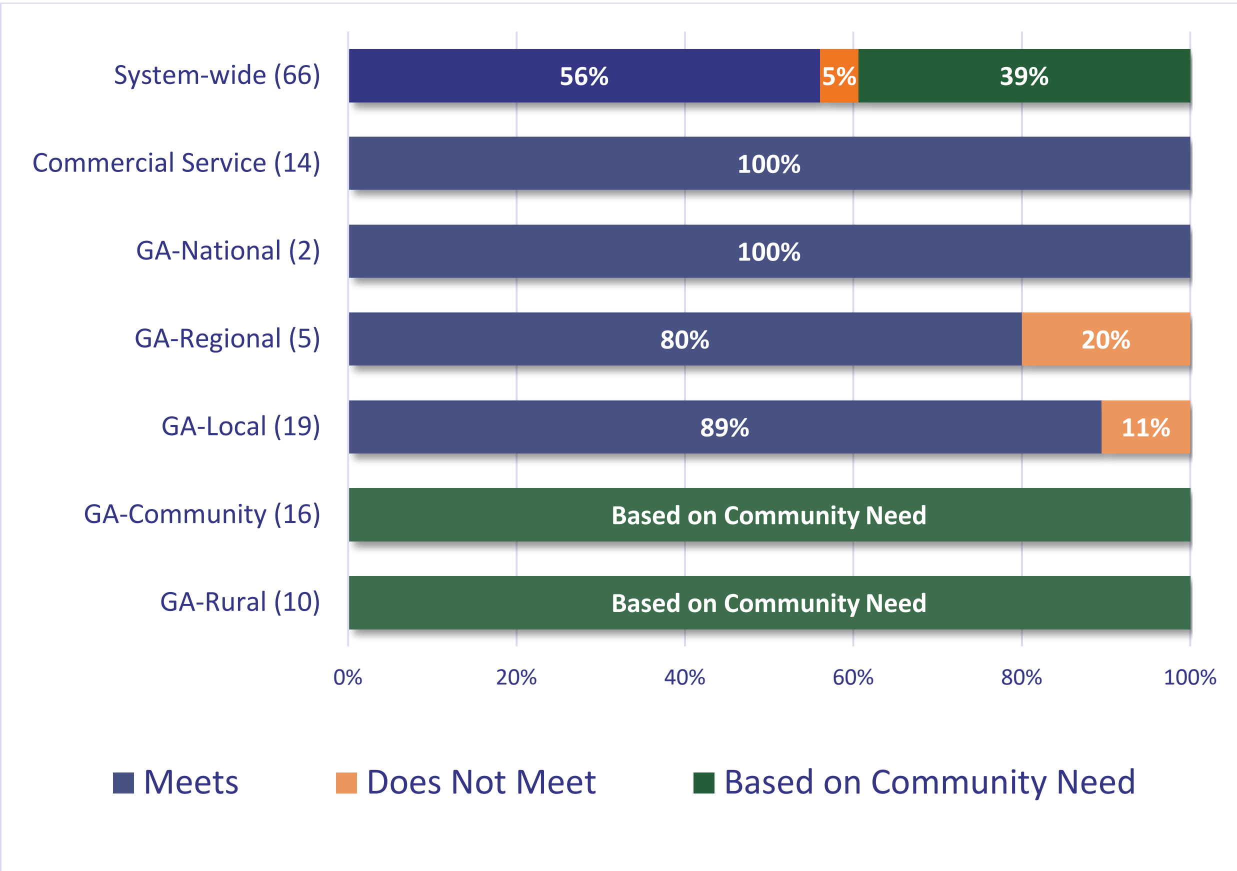
- 6.6.4.1 Jet A Fuel
- 6.6.4.2 AvGas Fuel
- 6.6.4.3 Aircraft De-icing
- 6.6.4.4 Courtesy Car
- 6.6.4.5 Sustainability Plan

6.6.4.1. Jet A Fuel

Jet A fuel availability is an important service to have at any airport that has frequent jet aircraft activity. For this reason, it is an objective for all Commercial Service, GA-National, and GA-Regional airports to have full Jet A fuel services, with 24/7 (self-serve or call out) service for GA-Local airports. GA-Community and GA-Rural airports are only recommended to have Jet A fuel services based on community need. GA Community and GA-Rural airports' objectives are based on community needs.

Figure 6.66 summarizes Jet A fuel objective performance for CASP airports. System wide, 95 percent of all airports are meeting their respective Jet A fuel service objective. All Commercial Service and GA-National airports meet the objectives, while 80 percent and 89 percent of GA-Regional and GA-Local airports, respectively, are meeting the objective. GA-Community and GA-Rural airports' objectives are based on community needs.

Figure 6.66. Percent of Airports by Classification Meeting Jet A Fuel Objective

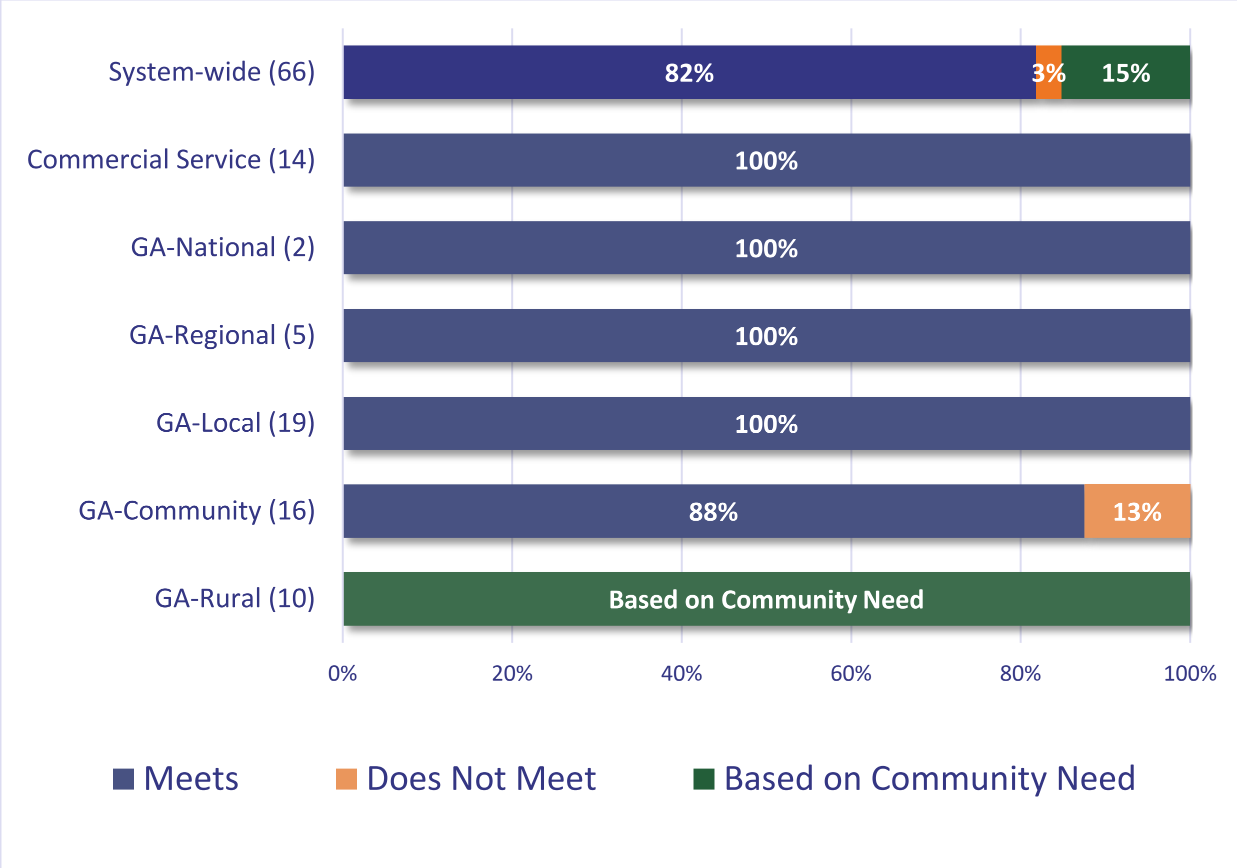


Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

6.6.4.2. AvGas Fuel

It is important that many Colorado system airports can provide both AvGas and Jet A fuel to attract a broader range of users. Therefore, it is an objective that Commercial Service, GA-National, and GA-Regional airports have full AvGas services, while GA-Local and GA-Community airports provide 24/7 (self-serve or call out) AvGas services. GA-Rural airports are recommended to have AvGas services based on community need. **Figure 6.67** summarizes AvGas fuel objective performance across CASP airport classifications. Overall, the system performs very well on this objective with 98 percent of all airports meeting their respective AvGas fuel objective. In fact, all the airport classifications are meeting this objective except for one airport belonging to the GA-Community classification.

Figure 6.67. Percent of Airports by Classification Meeting AvGas Fuel Objective

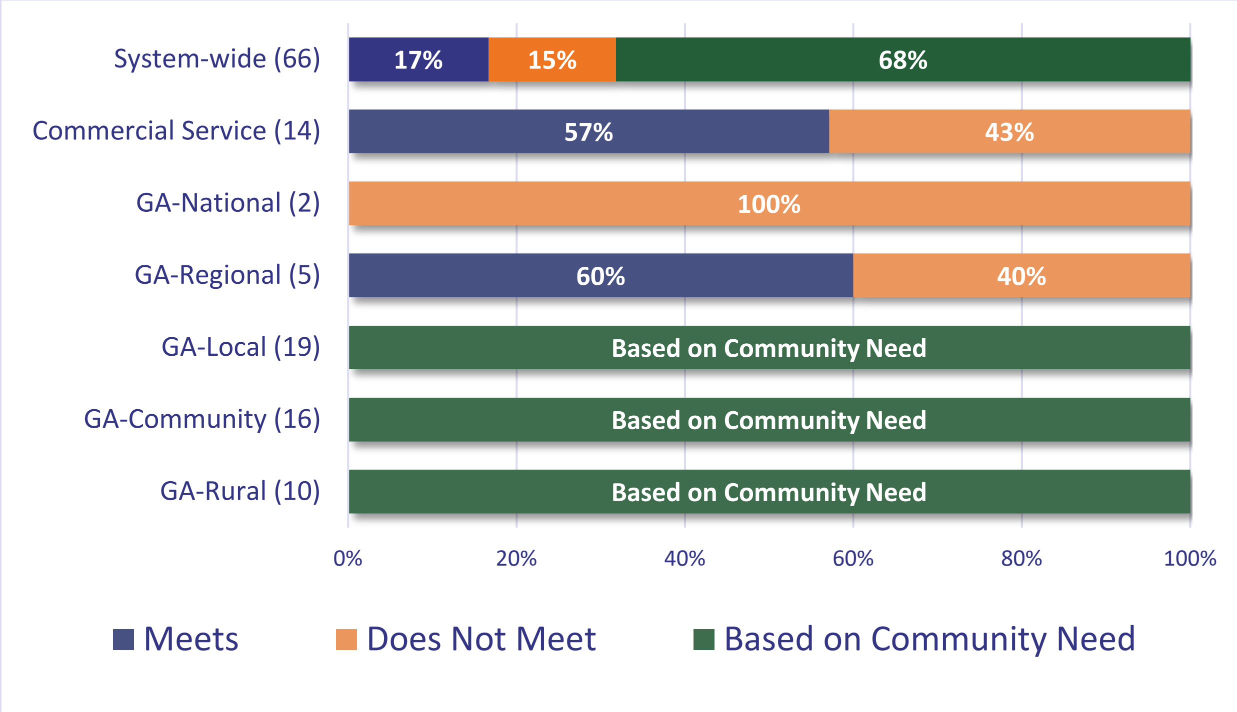


Sources: 2018 Inventory & Data Form; FAA 5010 Master Record, 2019

6.6.4.3. Aircraft De-icing

Many areas in Colorado experience harsh winters, and some airports are more affected by these icy conditions than others due to elevation and other factors. Icy conditions can cause a variety of issues for airports from service delays to unsafe operations. Therefore, it was determined that de-icing facilities would be incorporated as a service objective for CASP airports. The objective varies amongst the classifications, with de-icing facilities including fluid collection recommended at Commercial Service and GA-National airports and a dedicated de-icing area recommended for GA-Regional airports. De-icing facilities are based on community need for GA-Local, GA-Community, and GA-Rural airports. **Figure 6.68** summarizes aircraft de-icing objective performance for CASP airports. Eighty-three percent of CASP airports are meeting their respective aircraft de-icing objectives. More than half (57 percent) of Commercial Service airports and 60 percent of GA-Regional airports meet their respective aircraft de-icing objectives. Both GA-National airports did not meet the objective resulting in 100 percent not meeting. GA-Local, GA-Community, and GA-Rural airports objectives are based on community need.

Figure 6.68. Percent of Airports by Classification Meeting Aircraft De-icing Objective



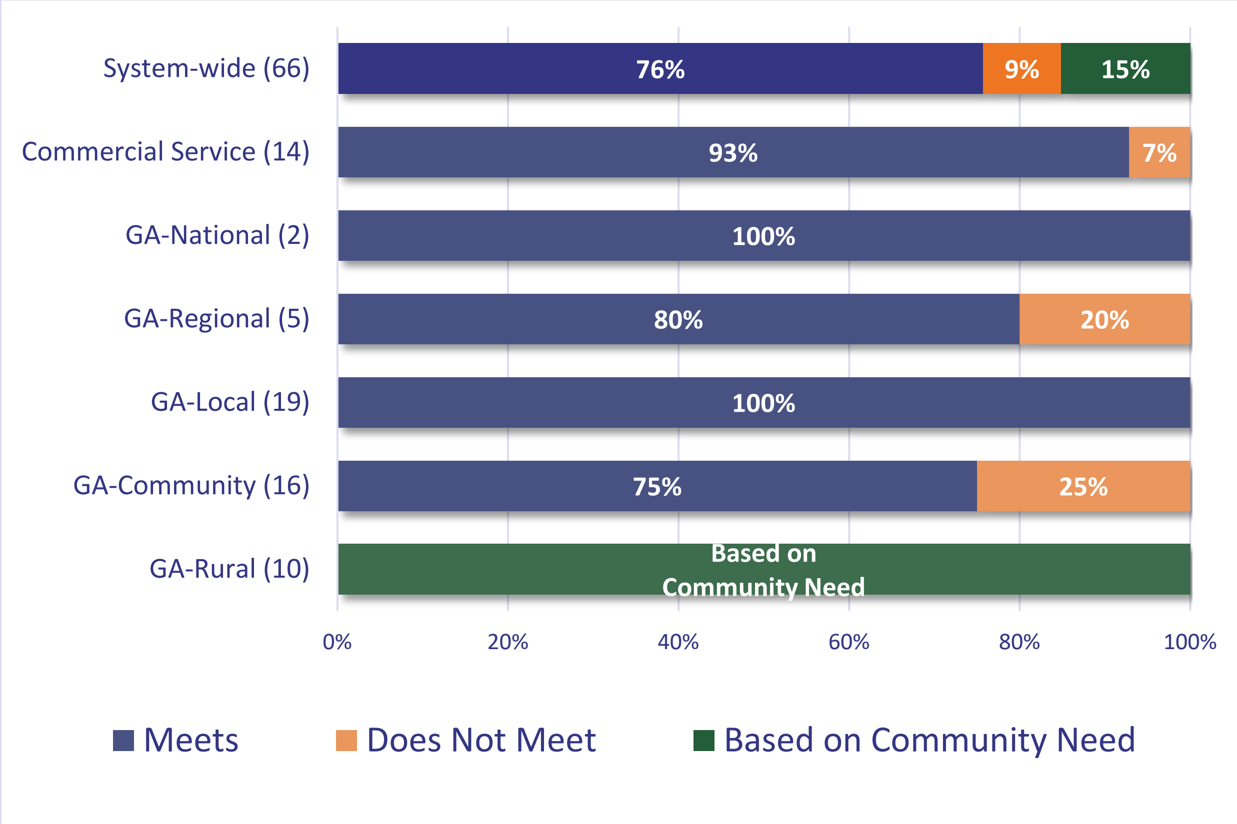
Source: 2018 Inventory & Data Form

6.6.4.4. Courtesy Car

Having adequate ground transportation at CASP airports is an important component to the overall system. Ground transportation can come in a variety of different forms, and also varies greatly between airport classifications. For this reason, the courtesy car was selected as the objective to measure ground transportation as a courtesy car is often the minimum that an airport will have. A courtesy car is a vehicle usually owned by the airport sponsor or FBO and is typically provided to pilots at no cost on a first-come, first-serve basis. In exchange for courtesy car use, users are often asked to put fuel in the vehicle, and/or leave a donation to support the vehicle's maintenance. **Section 6.3.2.1** airports were measured under the system indicator determining the percentage of airports that provide ground transportation, which included courtesy car or other form of ground transportation. Often the most rural or isolated airports in any given state will at least have a courtesy car on site for pilots or airport users to utilize to access the town or city associated with the airport.

Figure 6.69 summarizes courtesy car objective performance for all airport classifications in the CASP. Seventy-six percent of airports are meeting the courtesy car objective for their classification, with 100 percent of GA-National and GA-Local airports meeting the objective. Commercial Service airports are meeting this objective at 93 percent, while GA-Regional and GA-Community airports are meeting at 80 percent and 75 percent, respectively. The objective for GA-Rural airports is based on community need.

Figure 6.69. Percent of Airports Meeting Courtesy Car Objective



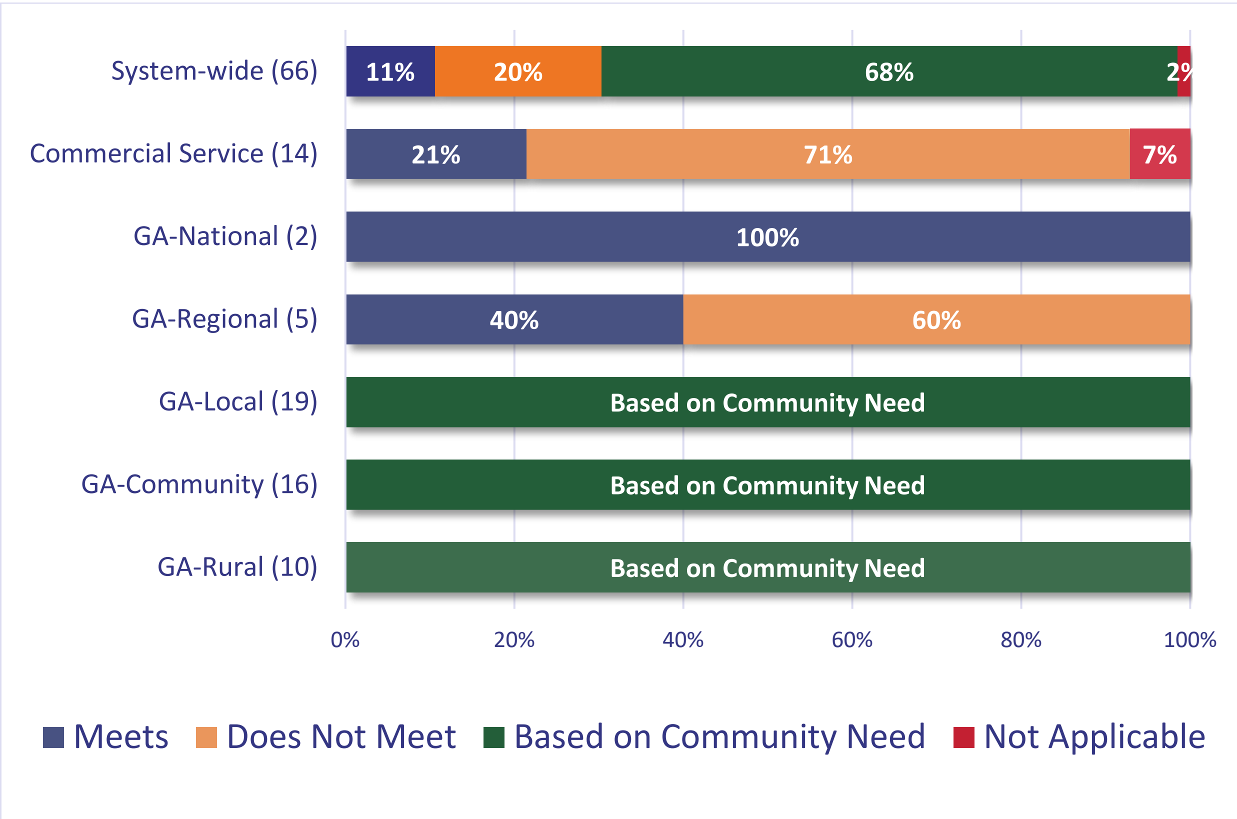
Source: 2018 Inventory & Data Form

6.6.4.5. Sustainability Plan

Airports can participate in a variety of elective planning initiatives and efforts as previously discussed in **Section 6.5.2.2**, and airports were measured with a system indicator related to sustainability planning under the System Viability goal. In the past decade, sustainability efforts and planning has become popular across multiple disciplines, including aviation. CDOT has created the Colorado Airport Sustainability Program which provide airports a free online toolkit to prepare their own sustainability plan. The program allows airports to create and implement their own customizable sustainability plan including a financial component that may provide helpful measurement tools, goal setting, and resources to improve financial sustainability. The objective for Commercial Service, GA-National, and GA-Regional airports is for all have a sustainability plan, GA-Local, GA-Community, and GA-Rural airports are based on community need.

Figure 6.70 summarizes sustainability plan objective performance for CASP airports. System-wide, 11 percent of all airports meeting the sustainability plan objective. One of the Commercial Service airports did not provide data on whether or not they have a sustainability plan, which resulted in seven percent of Commercial Service airports, and two percent of airports overall, receiving a “not applicable” outcome. Lastly, Commercial Service and GA-Regional have 21 percent and 40 percent of airports meeting this objective, respectively. These results differ from the system indicator on sustainability plans in **Section 6.5.2.2** because the objective for all GA-Local, GA-Community, and GA-Rural airports is designated as based on community need.

Figure 6.70. Percent of Airports by Classification Meeting Sustainability Plan Objective



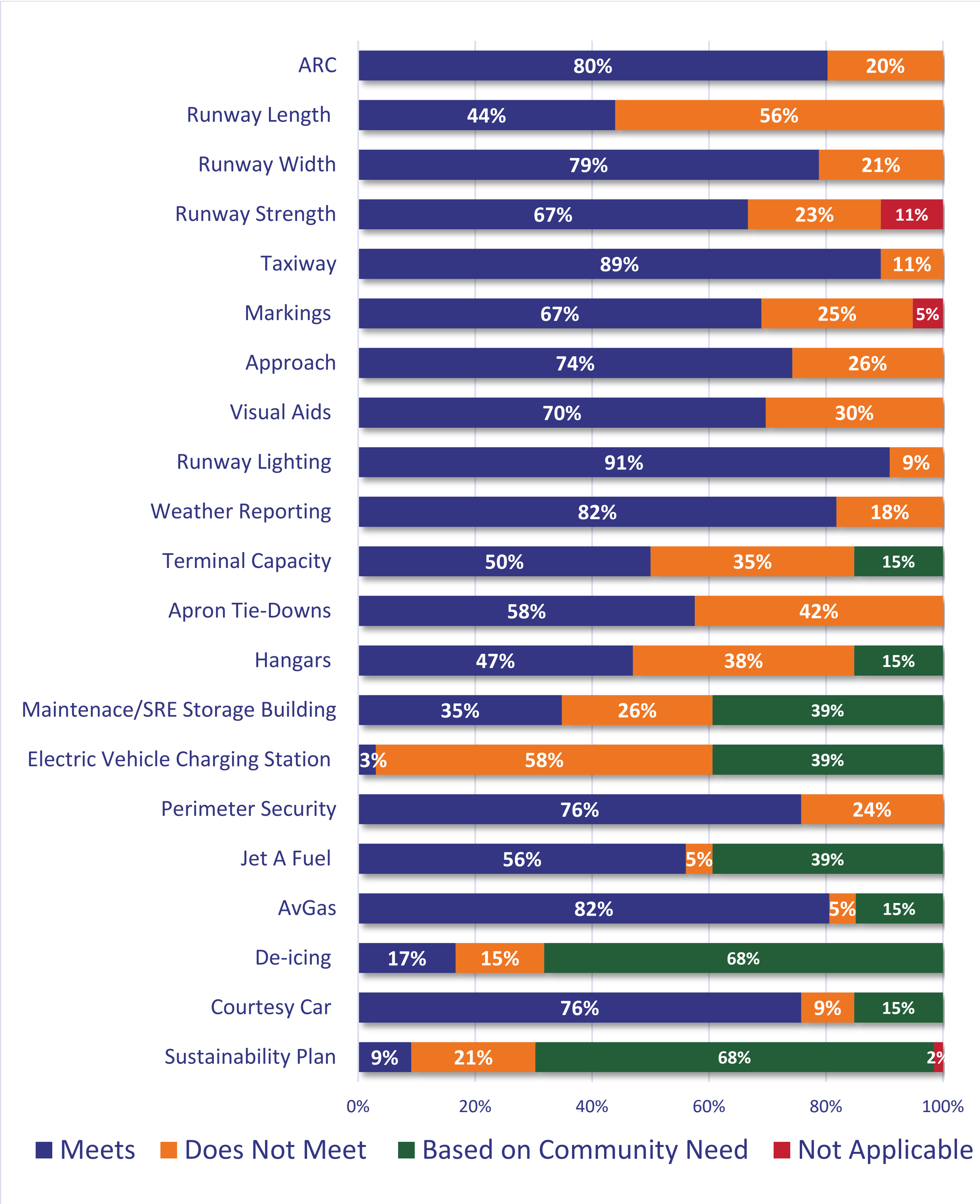
Source: 2018 Inventory & Data Form

6.6.5. Summary of Facility and Service Objectives

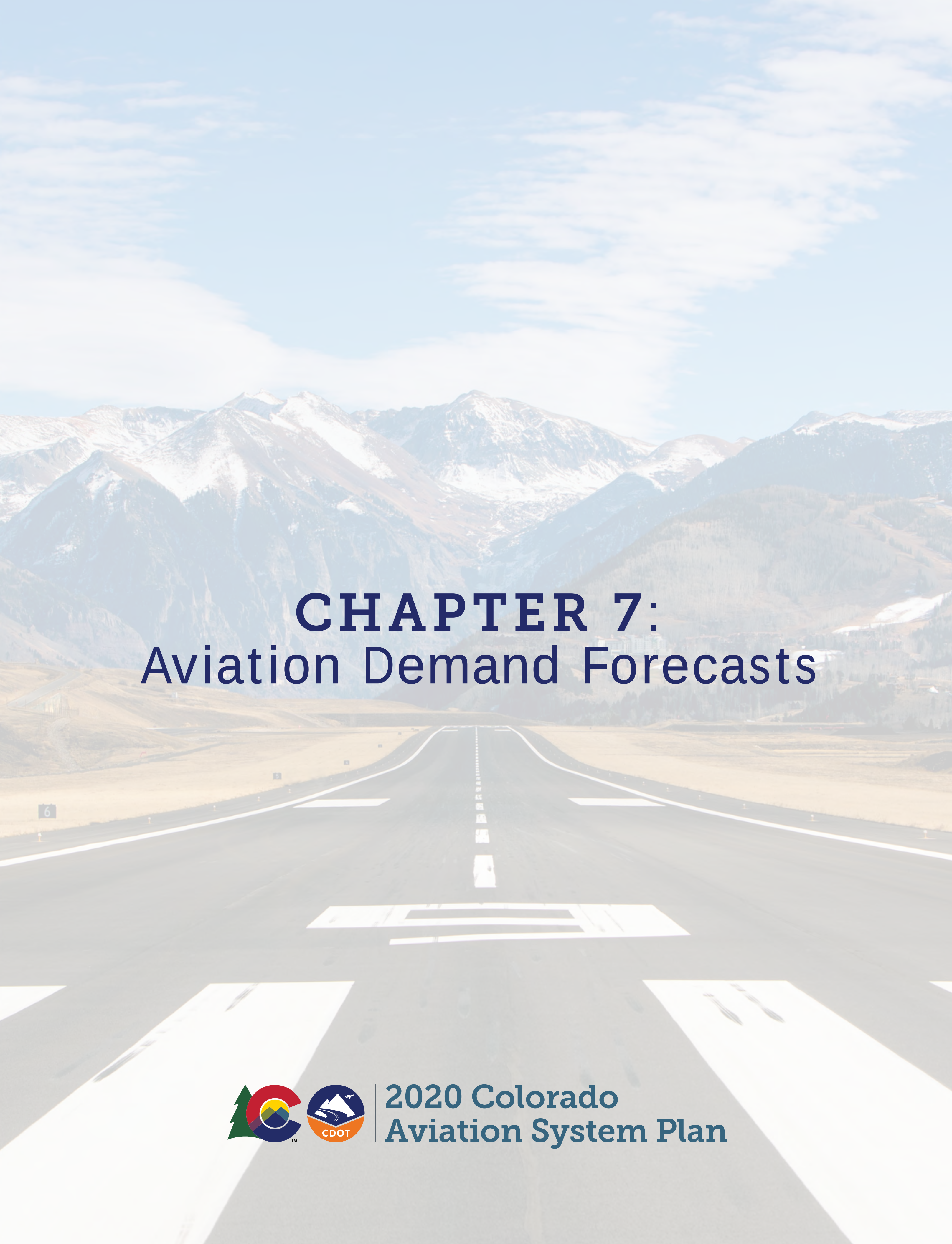
Section 6.6 and its associated subsections represent a comprehensive view of facility and service objectives performance for each CASP airport classification, and system-wide. It is difficult to compare objectives between classifications since each airport classification has a uniquely designed objective that corresponds with an airport's activity. However, included in **Appendix B** are individual report cards for each individual CASP airport that reports on how the airport performed on each facility and service objective. These report cards can be used to see how one airport performed compared to another airport within its same classification.

To conclude this section, a summary has been provided in **Figure 6.71** that presents the system-wide performance for each facility and service objective. Eighty percent or more of all system airports met the following facility and service objectives: ARC, runway width, taxiway, runway lighting, weather reporting, and AvGas. The system performed below 50 percent for the following objectives: runway length, hangars, maintenance/SRE building, electric vehicle charging stations, de-icing, and sustainability plan. When looking at the system-wide figures, 11 of the 21 facility and service objectives are being met with 70 percent or greater achieving the objectives.

Figure 6.71. System-wide Percent of Airports Meeting CASP Facility and Service Objectives



Sources: 2018 Inventory & Data Form; ALPs; FAA 5010 Master Record; Kimley-Horn, 2019



CHAPTER 7: Aviation Demand Forecasts

2020 Colorado Aviation System Plan

Chapter 7. Aviation Demand Forecasts

7.1. Introduction

Forecast analyses are an important component of aviation system planning because they lend insight into how future aviation demand may impact the system and its potential needs. Forecasts are prepared for aviation demand indicators such as enplanements, operations, and based aircraft for all commercial service and general aviation (GA) airports included in the 2020 CASP. Examination of how future demand will impact the aviation system is central to identification of constraints, strengths, opportunities, and recommendations for future system improvements to handle projected demand.

Developing reliable and accurate forecasts is dependent upon two elements: good baseline data from which to forecast and employing multiple methodologies to verify their authenticity. The reliability of data for some indicators is better than others. For example, enplanements are recorded by both commercial service airports and airlines as required by the FAA. Most airports maintain records on based aircraft as they relate to the revenues they collect, however, for operations at non-towered airports, there are no reliable data that are available from any consistent source. Baseline data was obtained from multiple sources to compare and select the most accurate data. For NPIAS airports, their baseline data was coordinated with the FAA to determine the preferred source by indicator. All baseline data was reviewed with CDOT Division of Aeronautics and PAC members for the 2020 CASP.

Forecasting methodologies used in the CASP provide both "top-down" and "bottom-up" approaches to determine future aviation projections. The use of multi-level metrics reveals how different demand indicators are influenced by market changes and are considered during the selection of "preferred" projections. Top-down approaches view the aviation system from a "bird's-eye" level to understand its overall performance and direction into the future. Bottom-up approaches analyze the individual airports' performances at the local level to gauge how demand may change based on local conditions.

The base year for the CASP is 2018 and forecasts are prepared for the next 20 years to 2038. All forecast projections in the following sections assume the aviation system will perform in an unconstrained environment throughout the duration of the planning horizon. Forecasts and aviation demand analyses in the CASP are documented in the following sections:

- Socio-Economic Trends
- Aviation Trends
- Enplanements Forecast
- Based Aircraft Forecast
- Operations Forecast
- Summary of Forecast Findings
- Alternative Forecasts

7.2. Socio-Economic Trends

There are strong relationships between demand for aviation, the size of an individual market, and prevailing economic conditions. This section examines trends in population, employment, per capita income, and gross regional product (GRP) in Colorado. The Colorado Office of Economic Development and International Trade (OEDIT) has divided the state into 14 regions to reflect the diversity of the state and its economy. Each region is shown in **Figure 7.1**. These 14 regions can be characterized roughly as follows:

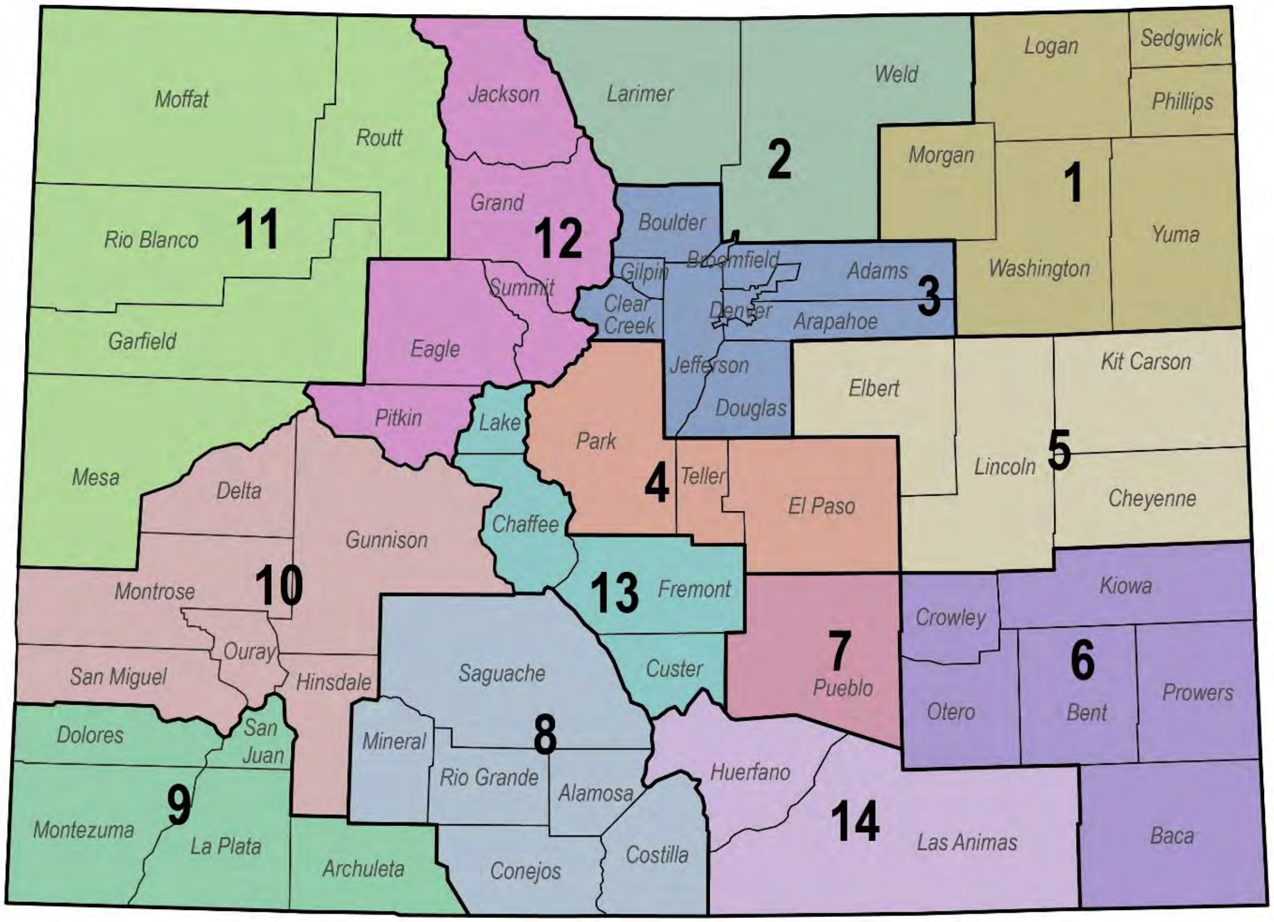
- Regions 1, 5, and 6 are located on the eastern plains of Colorado, and are noted for their strengths in agriculture, ranching, oil and gas development, wind and solar, as well as manufacturing.
- Regions 2, 3, 4, 7, and 14 make up Colorado's Front Range where most of Colorado's population lives and works. Denver, Northern Colorado, and Pikes Peak regions have the highest density of both people and jobs.
- Regions 10, 12, and 13 are notably Colorado's mountainous areas where tourism, skiing, and other outdoor activities are a key element of the local economies.
- Regions 8, 9, and 11 contain one of the most fertile valleys in Colorado (San Luis Valley), extensive natural resources, and important national recreational areas and heritage landmarks.

Because these regional clusters are diverse, the socio-economic analysis was completed for each OEDIT region and the whole state using Woods and Poole Economics county data for Colorado.[1] In addition, counties were grouped to also reflect the catchment area for Denver International Airport (DEN). Of the 64 counties in Colorado, 26 are considered direct users of airport services at DEN and include the following counties:

- Adams
- Arapahoe
- Boulder
- Cheyenne
- Clear Creek
- Denver
- Douglas
- Eagle
- El Paso
- Elbert
- Gilpin
- Grand
- Jackson
- Jefferson
- Kit Carson
- Larimar
- Lincoln
- Logan
- Morgan
- Park
- Phillips
- Sedgwick
- Summit
- Washington
- Weld
- Yuma

[1] CDOT Statewide and Regional Planning uses the Colorado Department of Local Affairs (DOLA), State Demography Office (SDO) data. The OEDIT Regions highlighted in the CASP are also the Colorado Planning and Management Regions of the State Demography Office. In most cases, demographic data from Colorado DOLA SDO is the same as Woods and Poole Economic, Inc.

Figure 7.1. OEDIT Regions



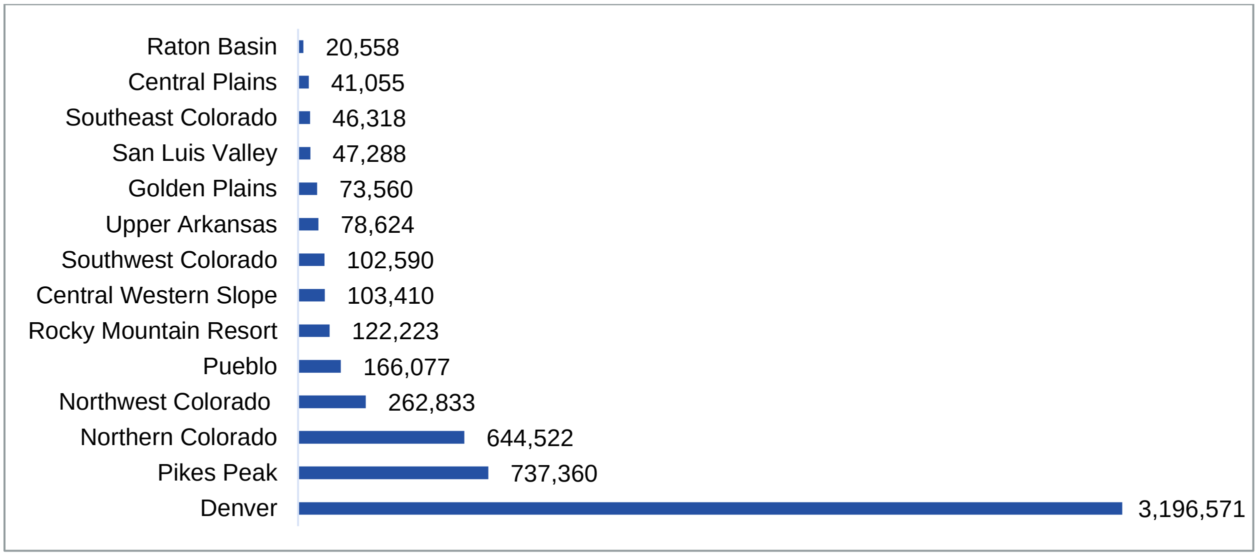
Source: OEDIT, 2018

Regions							
1	Golden Plains	4	Pikes Peak	8	San Luis Valley	12	Rocky Mountain Resort
2	Northern Colorado	5	Central Plains	9	Southwest Colorado	13	Upper Arkansas
3	Denver	6	Southeast Colorado	10	Central Western Slope	14	Raton Basin
		7	Pueblo	11	Northwest Colorado		

7.2.1. Population Trends

Population is an indicator of market size, growth trends, and market potential. The state of Colorado had an estimated 2018 population of 5.6 million people with more than half (57 percent) living in the Denver region and 82 percent living in the three northern Front Range regions (Denver, Pikes Peak, and Northern Colorado). **Figure 7.2** shows the distribution of population across OEDIT regions in 2018.

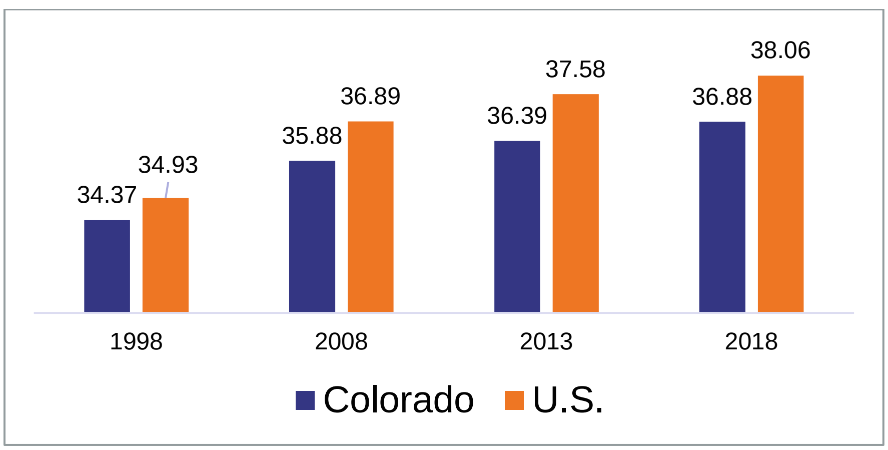
Figure 7.2. Population by OEDIT Region, 2018



Source: Woods and Poole Economics Inc., 2018

Colorado is a relatively young state when comparing median age with the rest of the U.S. **Figure 7.3** shows the median age for Colorado residents and the U.S. In both instances, median age is increasing over the last 20 years as the population is growing older.

Figure 7.3. Median Age of Coloradans and the U.S.



Source: Woods and Poole Economics Inc., 2018

Table 7.1 shows population growth in each region and in the DEN catchment area from 1998 to 2018. The state has grown by more than one-third (37 percent) since 1998 and, in the last 10 years, state population has grown at a compound annual growth rate (CAGR) of 1.4 percent. In more rural areas, growth is muted or in decline. It should be noted that CAGR calculates a constant rate of change over a given time period. It dampens the effect of volatility during periods that experience significant change and is essentially a "smoothed" annual growth rate.

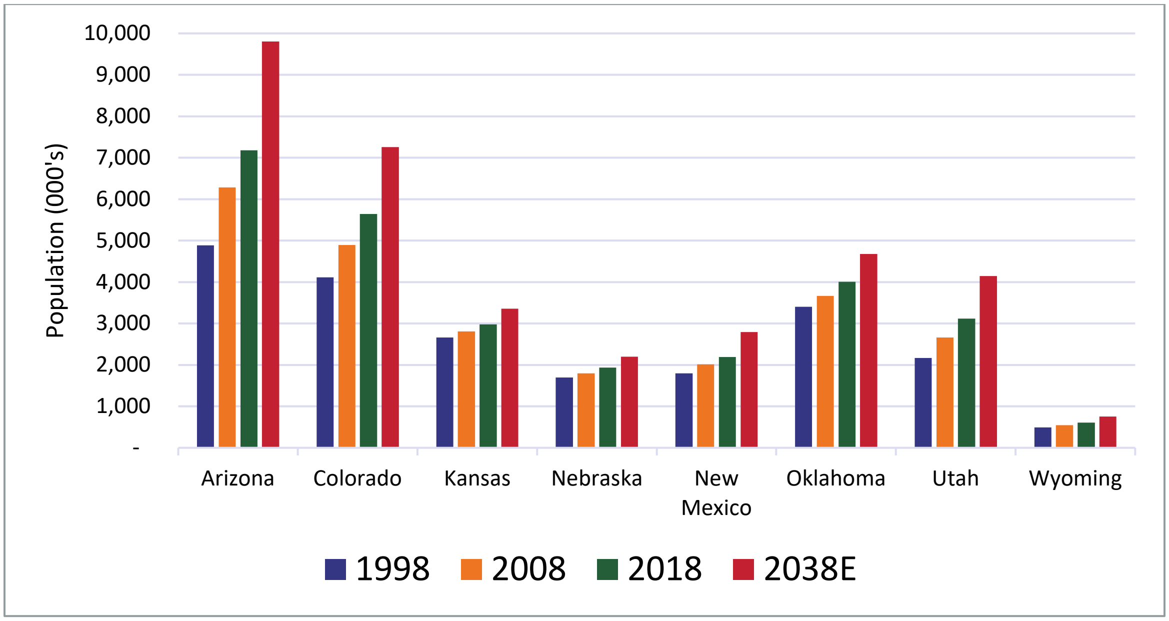
Table 7.1. Population Growth by OEDIT Region, 1998-2018

		Thousands			CAGR	
	Region	1998	2008	2018	1998-2008	2008-2018
1	Golden Plains	68.18	71.23	73.56	0.4%	0.3%
2	Northern Colorado	407.31	535.13	644.52	2.8%	1.9%
3	Denver	2,307.42	2,715.76	3,196.57	1.6%	1.6%
4	Pikes Peak	530.95	637.04	737.36	1.8%	1.5%
5	Central Plains	34.30	38.14	41.06	1.1%	0.7%
6	Southeast Colorado	52.18	48.50	46.32	-0.7%	-0.5%
7	Pueblo	137.69	156.75	166.08	1.3%	0.6%
8	San Luis Valley	45.12	45.85	47.29	0.2%	0.3%
9	Southwest Colorado	76.96	90.49	102.59	1.6%	1.3%
10	Central Western Slope	83.16	99.21	103.41	1.8%	0.4%
11	Northwest Colorado	191.52	241.85	262.83	2.4%	0.8%
12	Rocky Mountain Resort	88.09	110.65	122.22	2.3%	1.0%
13	Upper Arkansas	71.24	76.30	78.62	0.7%	0.3%
14	Raton Basin	22.51	22.84	20.56	0.1%	-1.0%
	Total Colorado	**4,116.64**	**4,889.73**	**5,642.99**	**1.7%**	**1.4%**
	DEN Catchment Area	**3,401.63**	**4,068.77**	**4,772.17**	**1.8%**	**1.6%**
	% DEN Catchment	**83%**	**83%**	**85%**		

Source: Woods and Poole Economics, Inc., 2018

When comparing population growth in Colorado with adjacent states, Colorado is the second largest state behind Arizona. **Figure 7.4** shows population growth for the eight states in the region and includes forecasted population in 2038. In 20 years, population in Colorado is expected to reach 7.3 million people.

Figure 7.4. Population Growth in Mountain States, 1998-2038



Source: Woods and Poole Economics, Inc., 2018

Table 7.2 shows population forecasts for Colorado by OEDIT region, both in number and the CAGR.

Table 7.2. Population Forecasts for OEDIT Regions, 2018-2038

		Thousands			CAGR	
	Region	2018	2028	2038	2018-2028	2028-2038
1	Golden Plains	73.56	75.92	77.10	0.3%	0.2%
2	Northern Colorado	644.52	762.24	886.91	1.7%	1.5%
3	Denver	3,196.57	3,668.01	4,169.70	1.4%	1.3%
4	Pikes Peak	737.36	829.98	923.68	1.2%	1.1%
5	Central Plains	41.06	44.76	48.17	0.9%	0.7%
6	Southeast Colorado	46.32	45.72	44.64	-0.1%	-0.2%
7	Pueblo	166.08	176.96	186.28	0.6%	0.5%
8	San Luis Valley	47.29	49.14	50.26	0.4%	0.2%
9	Southwest Colorado	102.59	125.18	150.79	2.0%	1.9%
10	Central Western Slope	103.41	112.91	121.37	0.9%	0.7%
11	Northwest Colorado	262.83	299.34	335.65	1.3%	1.2%
12	Rocky Mountain Resort	122.22	139.18	156.02	1.3%	1.1%
13	Upper Arkansas	78.62	83.92	88.51	0.7%	0.5%
14	Raton Basin	20.56	20.66	20.51	0.0%	-0.1%
	Total Colorado	**5,642.99**	**6,433.91**	**7,259.59**	**1.3%**	**1.2%**
	DEN Catchment Area	**4,772.17**	**5,471.27**	**6,207.07**	**1.4%**	**1.3%**
	% DEN Catchment	**85%**	**85%**	**86%**		

Source: Woods and Poole Economics, Inc., 2018

7.2.2. Economic Trends

Aviation demand is closely tied to economic conditions. For system planning purposes, employment, per capita income, and GRP were used to discern changes in the Colorado economy that might impact aviation demand. Several trends were apparent and are detailed in the following subsections.

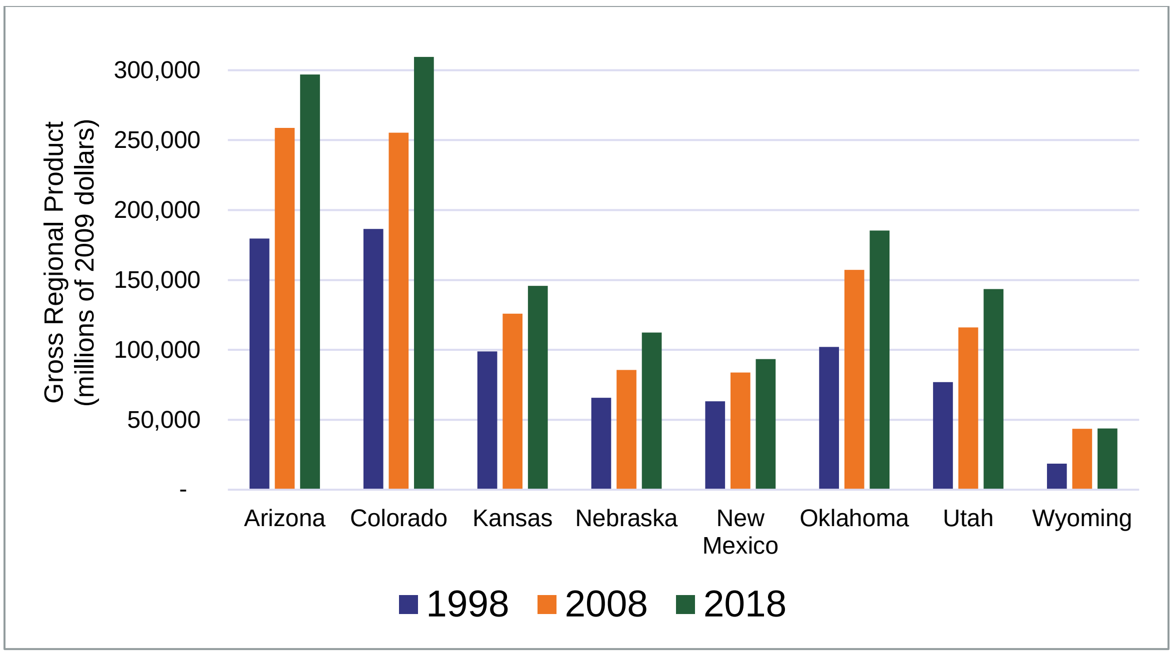
7.2.2.1. Colorado is an Economic Leader in the Region

Advanced industries are redefining Colorado's economy as private investment grows in aerospace, advanced manufacturing, bioscience, electronics, information technology, craft beer, and cannabis. These specialty industries are providing additional growth paths and employment opportunities to the mainstays of Colorado's economy that include:

- Agriculture & Food
- Defense & Homeland Security
- Energy and Natural Resources
- Tourism

In 2018, the State led its neighbors in total Gross Regional Product (GRP) as **Figure 7.5** shows.

Figure 7.5. GRP Growth in Mountain States, 1998-2018

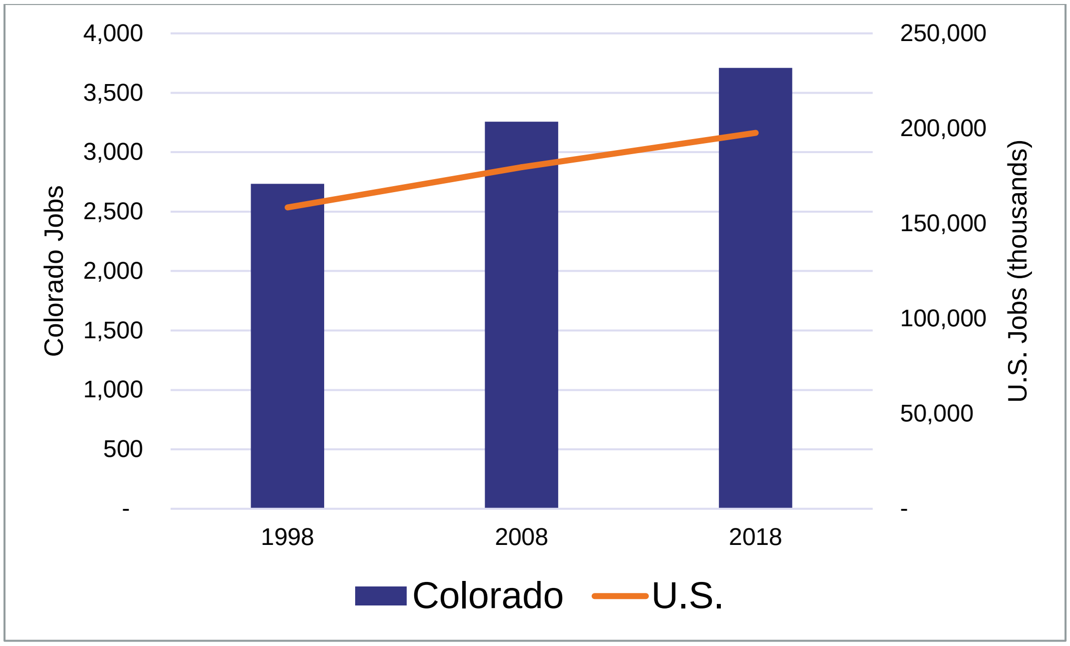


Source: Woods and Poole Economics, Inc., 2018

7.2.2.2. Employment is Growing at a Faster Rate in Colorado than in the U.S. Average

Jobs in Colorado grew by 36 percent in the last 20 years (or 1.5 percent per year); in the U.S. jobs grew by 25 percent (or 1.1 percent per year) as shown in **Figure 7.6.**

Figure 7.6. Growth in Employment, Colorado and the U.S., 1998-2018

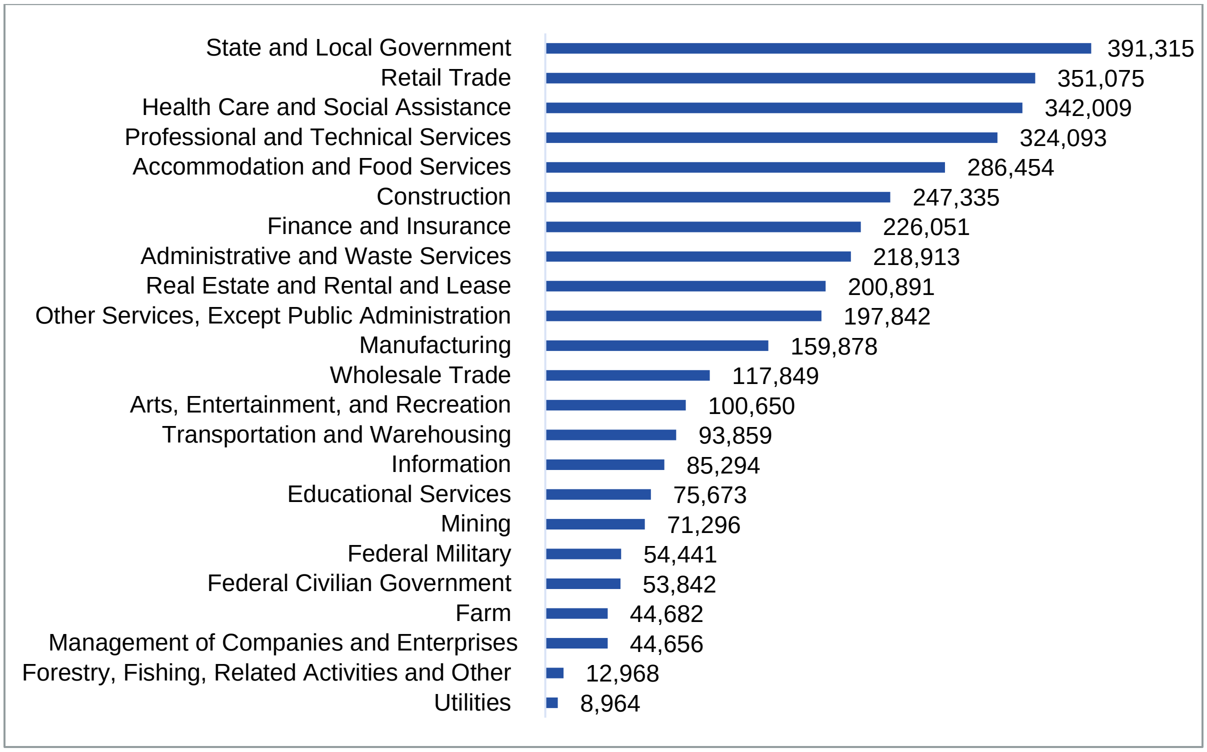


Source: Woods and Poole Economics, Inc., 2018

7.2.2.3. Employment by Industry is Changing

Supporting a diverse economy, Colorado has a high participation rate in the labor force. In 2018, 68 percent of the population was employed, compared with a 60 percent participation rate in the rest of the U.S. **Figure 7.7** shows employment by industry. Top employers include state and local government, retail trade, health care and social assistance, followed by professional and technical services then accommodation and food services. As expected in a growing economy, construction ranks sixth in the state as a top employer. Aviation employment exists under the industry category "Transportation and Warehousing". The industry as a whole reported almost 94,000 employees in 2018.

Figure 7.7. Colorado Employment by Industry, 2018



Source: Woods and Poole Economics, Inc., 2018

Employment by industry has changed in the last 20 years as **Table 7.3** shows. In 1998, retail was the largest employer, followed by state and local government, accommodations and food services, and manufacturing. Over the 20-year period, five sectors remained steady or declined: farm (1 percent), federal civilian government (0 percent), utilities (-2 percent), information (-13 percent), and manufacturing (-20 percent). The industries that experienced the largest growth in employment were mining (209 percent), management of companies and enterprises (164 percent), and educational services (147 percent). The transportation and warehousing industry which houses aviation industry's statistics saw a one percent increase between 1998 and 2008. Between 2008 and 2018, the entire industry experienced a 0.8 percent growth in employment. **Table 7.4** ranks forecast employment by industry in 2038. Overall, employment in Colorado is expected to grow in the next 20 years by 1.3 million jobs or 34 percent, with health care and social assistance becoming the State's largest industry. In the next 10 years, construction, real estate, finance and insurance, as well as educational services are anticipated to grow substantially.

Table 7.3. Colorado Employment by Industry, 1998-2018

Industry	Thousands			CAGR	
	1998	2008	2018	1998-2008	2008-2018
Retail Trade	301.63	318.70	351.08	0.6%	1.0%
State and Local Government	272.82	339.02	391.32	2.2%	1.4%
Health Care and Social Assistance	202.12	268.57	342.01	2.9%	2.4%

Industry	Thousands			CAGR	
	1998	2008	2018	1998-2008	2008-2018
Accommodation and Food Services	201.76	243.18	286.45	1.9%	1.7%
Manufacturing	200.54	156.34	159.88	-2.5%	0.2%
Professional and Technical Services	198.34	281.63	324.09	3.6%	1.4%
Construction	196.35	241.47	247.34	2.1%	0.2%
Administrative and Waste Services	163.75	196.98	218.91	1.9%	1.1%
Finance and Insurance	153.37	186.69	226.05	2.0%	1.9%
Other Services, Except Public Administration	141.18	174.29	197.84	2.1%	1.3%
Real Estate and Rental and Lease	128.96	176.12	200.89	3.2%	1.3%
Wholesale Trade	102.99	111.18	117.85	0.8%	0.6%
Information	98.34	89.38	85.29	-1.0%	-0.5%
Transportation and Warehousing	78.44	86.81	93.86	1.0%	0.8%
Arts, Entertainment, and Recreation	64.20	86.18	100.65	3.0%	1.6%
Federal Civilian Government	53.89	52.50	53.84	-0.3%	0.3%
Farm	44.23	45.18	44.68	0.2%	-0.1%
Federal Military	42.53	45.86	54.44	0.8%	1.7%
Educational Services	30.69	55.26	75.67	6.1%	3.2%
Mining	23.11	48.22	71.30	7.6%	4.0%
Management of Companies and Enterprises	16.91	32.53	44.66	6.8%	3.2%
Forestry, Fishing, Related Activities and Other	9.54	10.93	12.97	1.4%	1.7%
Utilities	9.13	8.86	8.96	-0.3%	0.1%
Total Colorado	**2,734.80**	**3,255.88**	**3,710.03**	**1.8%**	**1.3%**

Source: Woods and Poole Economics, Inc.

Table 7.4. Forecast of Colorado Employment by Industry, 2018-2038

Industry	Thousands			CAGR	
	2018	2028	2038	2018-2028	2028-2038
Health Care and Social Assistance	342.01	444.13	538.91	2.6%	2.0%
State and Local Government	391.32	457.73	500.91	1.6%	0.9%
Retail Trade	351.08	417.45	477.62	1.7%	1.4%
Professional and Technical Services	324.09	378.26	429.95	1.6%	1.3%
Accommodation and Food Services	286.45	339.01	373.68	1.7%	1.0%
Construction	247.34	312.36	352.29	2.4%	1.2%

Industry	Thousands			CAGR	
	2018	2028	2038	2018-2028	2028-2038
Finance and Insurance	226.05	276.11	304.52	2.0%	1.0%
Real Estate and Rental and Lease	200.89	252.77	301.73	2.3%	1.8%
Administrative and Waste Services	218.91	260.50	292.14	1.8%	1.2%
Other Services, Except Public Administration	197.84	237.49	274.43	1.8%	1.5%
Manufacturing	159.88	162.71	160.82	0.2%	-0.1%
Arts, Entertainment, and Recreation	100.65	123.79	143.26	2.1%	1.5%
Wholesale Trade	117.85	128.12	134.31	0.8%	0.5%
Educational Services	75.67	100.65	123.22	2.9%	2.0%
Transportation and Warehousing	93.86	105.83	115.54	1.2%	0.9%
Information	85.29	91.27	95.94	0.7%	0.5%
Mining	71.30	78.73	85.32	1.0%	0.8%
Management of Companies and Enterprises	44.66	61.16	77.34	3.2%	2.4%
Federal Civilian Government	53.84	56.87	59.39	0.5%	0.4%
Federal Military	54.44	54.79	55.09	0.1%	0.1%
Farm	44.68	47.25	48.57	0.6%	0.3%
Forestry, Fishing, Related Activities and Other	12.97	14.73	16.18	1.3%	0.9%
Utilities	8.96	9.68	10.13	0.8%	0.5%
Total Colorado	**3,710.03**	**4,411.38**	**4,971.30**	**1.7%**	**1.2%**

Source: Woods and Poole Economics, Inc., 2018

7.2.2.4. Employment is Concentrated in the Urban Areas

Table 7.5 shows employment by OEDIT region. The three northern Front Range regions comprise 82 percent of the jobs in Colorado in 2018.

Table 7.5. Employment by OEDIT Region, 2018

Region	Employment	Share
Denver	2,233,432	58%
Northern Colorado	498,389	13%
Pikes Peak	424,585	11%
Northwest Colorado	170,469	4%
Rocky Mountain Resort	116,574	3%
Pueblo	80,244	2%
Southwest Colorado	70,025	2%
Central Western Slope	66,173	2%
Golden Plains	47,225	1%
Upper Arkansas	38,311	1%
San Luis Valley	27,792	1%
Southeast Colorado	25,445	1%
Central Plains	21,065	1%
Raton Basin	11,632	0%
Total Employment	**3,831,361**	**100%**

Source: Woods and Poole Economics, Inc., 2018

7.2.2.5. The Great Recession of 2007-2009 Impacted Rural Areas and Resorts Disproportionately

Regions where tourism, farming, and retail trade dominate were hardest hit by the recession as shown by loss of jobs and GRP during the 2008-2013 period in **Table 7.6** and **Table 7.7**. Fortunately, most regions with the exceptions of Northwest Colorado and Raton Basin have recovered to above 2007-2009 levels.

Table 7.6. Employment by OEDIT Region, 1998-2018

		Thousands of Jobs				Percent Change			
	Region	1998	2008	2013	2018	1998-2008	2008-2018	2008-2013	2013-2018
1	Golden Plains	40.18	42.85	44.11	47.23	7%	10%	3%	7%
2	Northern Colorado	330.20	412.39	446.48	498.39	25%	21%	8%	12%
3	Denver	1,625.40	1,909.52	2,010.68	2,233.43	17%	17%	5%	11%
4	Pikes Peak	331.47	384.15	390.27	424.59	16%	11%	2%	9%
5	Central Plains	16.05	19.20	19.64	21.07	20%	10%	2%	7%
6	Southeast Colorado	26.87	24.97	24.83	25.45	-7%	2%	-1%	2%
7	Pueblo	69.46	76.52	75.23	80.24	10%	5%	-2%	7%
8	San Luis Valley	23.65	26.02	26.20	27.79	10%	7%	1%	6%
9	Southwest Colorado	49.62	64.17	62.42	70.03	29%	9%	-3%	12%
10	Central Western Slope	52.10	66.05	61.22	66.17	27%	0%	-7%	8%
11	Northwest Colorado	121.33	169.86	156.20	170.47	40%	0%	-8%	9%
12	Rocky Mountain Resort	91.16	109.51	104.31	116.57	20%	6%	-5%	12%
13	Upper Arkansas	31.84	37.05	35.66	38.31	16%	3%	-4%	7%
14	Raton Basin	11.13	12.89	11.21	11.63	16%	-10%	-13%	4%
	Total Colorado	**2,820.46**	**3,355.13**	**3,468.46**	**3,831.36**	**19%**	**14%**	**3%**	**11%**
	DEN Catchment Area	**2,403.52**	**2,842.39**	**2,982.12**	**3,304.35**	**18%**	**16%**	**5%**	**11%**
	% DEN Catchment	**85%**	**85%**	**86%**	**86%**				

Source: Woods and Poole Economics, Inc., 2018

Table 7.7. Gross Region Product (in Millions of 2009 Dollars)

	Gross Regional Product (millions of 2009 $$)			Percent Share	Growth Rate		
Region	2008	2013	2018		2008-2013	2013-2018	2008-2018
Golden Plains	$2,575	$2,709	$2,994	1%	5%	11%	16%
Northern Colorado	$20,725	$22,793	$27,185	9%	10%	19%	31%
Denver	$166,233	$177,379	$207,203	67%	7%	17%	25%
Pikes Peak	$26,996	$28,330	$32,120	10%	5%	13%	19%
Central Plains	$949	$997	$1,085	0%	5%	9%	14%
Southeast Colorado	$1,301	$1,337	$1,414	0%	3%	6%	9%
Pueblo	$4,584	$4,707	$5,203	2%	3%	11%	14%
San Luis Valley	$1,336	$1,389	$1,564	1%	4%	13%	17%
Southwest Colorado	$3,784	$3,889	$4,418	1%	3%	14%	17%
Central Western Slope	$3,711	$3,347	$3,834	1%	-10%	15%	3%
Northwest Colorado	$13,206	$10,867	$12,206	4%	-18%	12%	-8%
Rocky Mountain Resort	$7,171	$6,366	$7,622	2%	-11%	20%	6%
Upper Arkansas	$1,928	$1,900	$2,125	1%	-1%	12%	10%
Raton Basin	$776	$647	$688	0%	-17%	6%	-11%
State of Colorado	**$255,229**	**$266,623**	**$309,626**	**100%**	**4%**	**16%**	**21%**
DEN Catchment Area	**$222,188**	**$236,363**	**$275,596**	**89%**	**6%**	**17%**	**24%**

Source: Woods and Poole Economics, Inc., 2018

7.2.2.6. Per Capita Income is not Evenly Distributed

Using inflation-adjusted dollars, average per capita income in the state is $47,542, however, there is variability across the state. **Table 7.8** shows personal income per capita for each OEDIT region and compares each region with the State (i.e. Colorado is indexed at 100). Denver and the Rocky Mountain Resort regions have the highest per capita income; the Upper Arkansas region has the lowest.

Table 7.8. Total Personal Income per Capita (in 2009 dollars)

	Region	2018	Index
1	Golden Plains	$39,824	84%
2	Northern Colorado	$40,358	85%
3	Denver	$53,020	112%
4	Pikes Peak	$40,685	86%
5	Central Plains	$43,542	92%
6	Southeast Colorado	$33,248	70%
7	Pueblo	$32,700	69%
8	San Luis Valley	$32,997	69%
9	Southwest Colorado	$41,464	87%
10	Central Western Slope	$36,380	77%
11	Northwest Colorado	$41,657	88%
12	Rocky Mountain Resort	$60,631	128%
13	Upper Arkansas	$30,824	65%
14	Raton Basin	$35,800	75%
	State of Colorado	**$47,542**	**100%**
	DEN Catchment Area	**$49,152**	**103%**

Source: Woods and Poole Economics, Inc., 2018

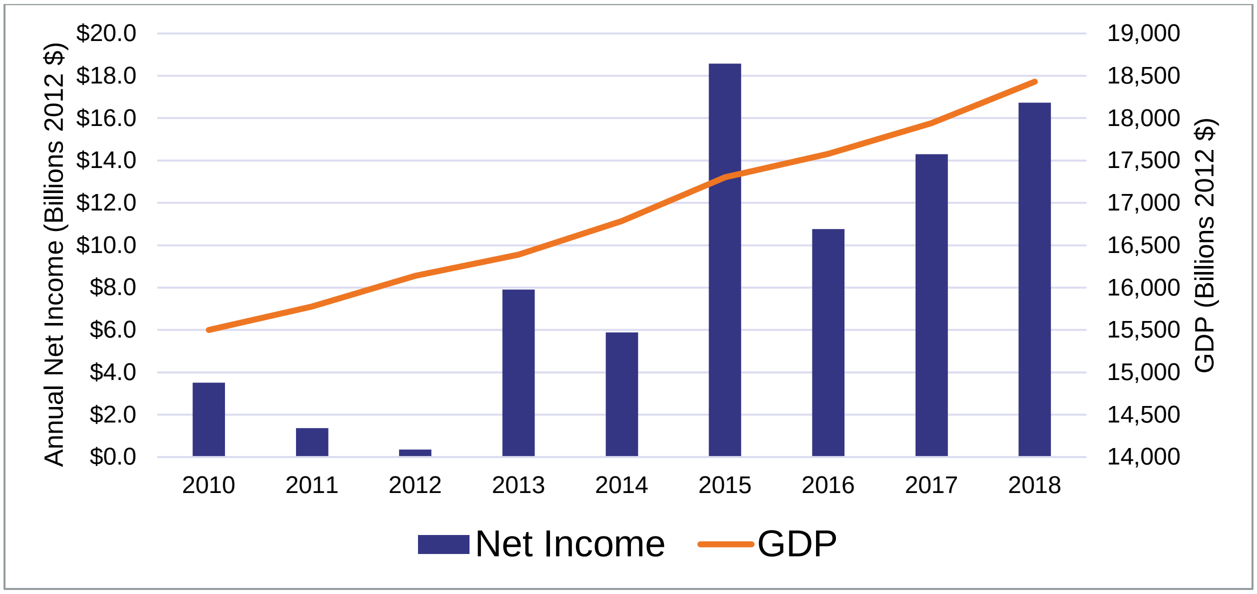
7.3. Aviation Trends

As noted, population and economic factors influence current and future aviation activity. In addition, the cost of labor, equipment, and fuel also impact the availability of commercial air service, aircraft in use, and the cost of flying. These macro factors will influence all segments of aviation activity at Colorado's airports and are examined below, beginning with commercial aviation, followed by a discussion of air cargo, then GA trends.

7.3.1. Commercial Aviation

U.S. airlines performed well in 2018, lengthening an undisrupted stretch of positive profits to eight years. **Figure 7.8** shows real net income for domestic U.S. scheduled service passenger airlines and gross domestic product (GDP) and underscores the strong connections between economic activity and airline performance. That said, today's domestic airline industry, despite consistently profitable results, looks very different than it did a decade ago. Recovery following the recession of 2007-2009 was cautious. Airlines lowered operating costs by eliminating unprofitable routes, grounded less fuel-efficient aircraft, and experimented with new pricing strategies. The number of domestic airlines operating also declined through mergers and bankruptcies.

Figure 7.8. Domestic U.S. Scheduled Service Passenger Airlines Annual Net Income and GDP (Billions of 2012$)



Sources: IHS Markit and Bureau of Transportation Statistics, 2018

7.3.1.1. Categories of U.S. Airlines

For purposes of forecasting commercial aviation, the FAA groups commercial airlines into mainline and regional carriers. Mainline carriers provide air service typically with aircraft that have 90 or more seats. Regional carriers use aircraft with 89 or less seats and their routes primarily serve as feeders to the mainline carriers. Regionals are either owned by the mainline carriers or operate under contract to the mainline carriers. In 2019, the U.S. airline industry represents a greatly consolidated number of airlines. Mainline carriers divide into three categories: network, value, and ultra low-cost carriers (ULCCs), representing different business models and operational characteristics. **Figure 7.9** shows the U.S. mainline airlines in their respective categories.

Figure 7.9. U.S. Mainline Airline Categories

Network Carriers	Value Carriers	Ultra Low-Cost Carriers
•American •Delta •United	•Alaska •Hawaiian •JetBlue •Southwest	•Allegiant •Frontier •Spirit

Source: Oliver Wyman, Airline Economic Analysis, 2018-2019

On an operational basis, network carriers have extensive domestic and international service and rely on hub and spoke route systems that integrate into worldwide multi-carrier networks. They have the highest unit revenue and highest revenue structure. Value carriers and ultra-low-cost carriers (ULCCs) at one time were a single group, however, cost structures, reliance on ancillary revenues, and capacity expansion patterns logically separate these carriers into two distinct categories.

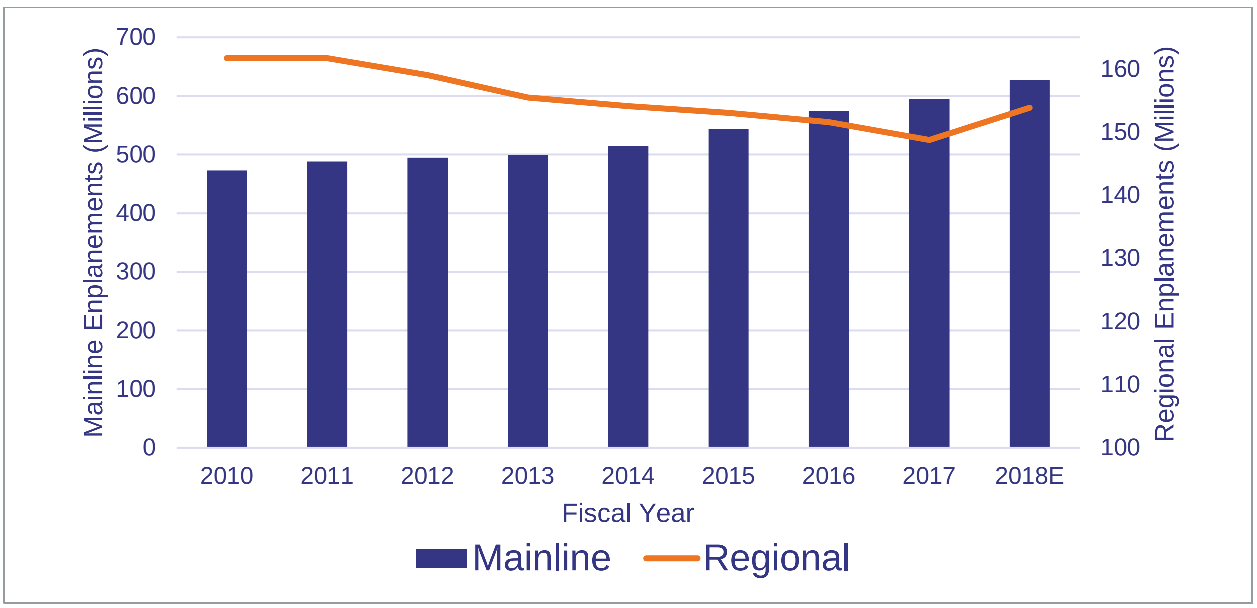
From a system planning perspective, the carriers and their regional partners that survived the recession represent a contracted field of air service development prospects.

7.3.1.2. Regional Market Continues to Shrink

In post-recession years, the mainline carriers (network, value, and ULCCs) recovered and continued to increase capacity and the number of passengers carried. In 2018, this group provided 14.8 percent more available seat miles (ASMs) than 2007 and carried 17.8 percent more passengers. Mainline carrier seats per aircraft mile grew from 152 seats on domestic routes in 2010 to 164.2 seats in 2018. Domestic departures on the other hand, remain approximately 17 percent below 2007 levels. Domestic load factors reached historic highs of 84.7 percent in 2018.[2] Load factors indicate the number of passengers in relation to the number of available seats on a flight. Higher load factors demonstrate a higher percentage of seats filled with passengers. Airlines are flying larger aircraft while conducting fewer operations, having implications on terminal and airfield operational capacities.

The regional carrier market has not enjoyed a similar recovery. Regional carrier capacity has grown 0.5 percent over the same period and passengers are down 1.5 percent.[3] With fewer mainline carriers, regional carriers are competing for even fewer contracts to provide shorter haul service for the mainline carriers. **Figure 7.10** compares growth in domestic revenue passenger enplanements for mainline carriers and regional carriers. The decline in regional carrier enplanements is evident against the backdrop of increasing mainline enplanements.

Figure 7.10. Scheduled Domestic U.S. Revenue Passenger Enplanements (Millions)



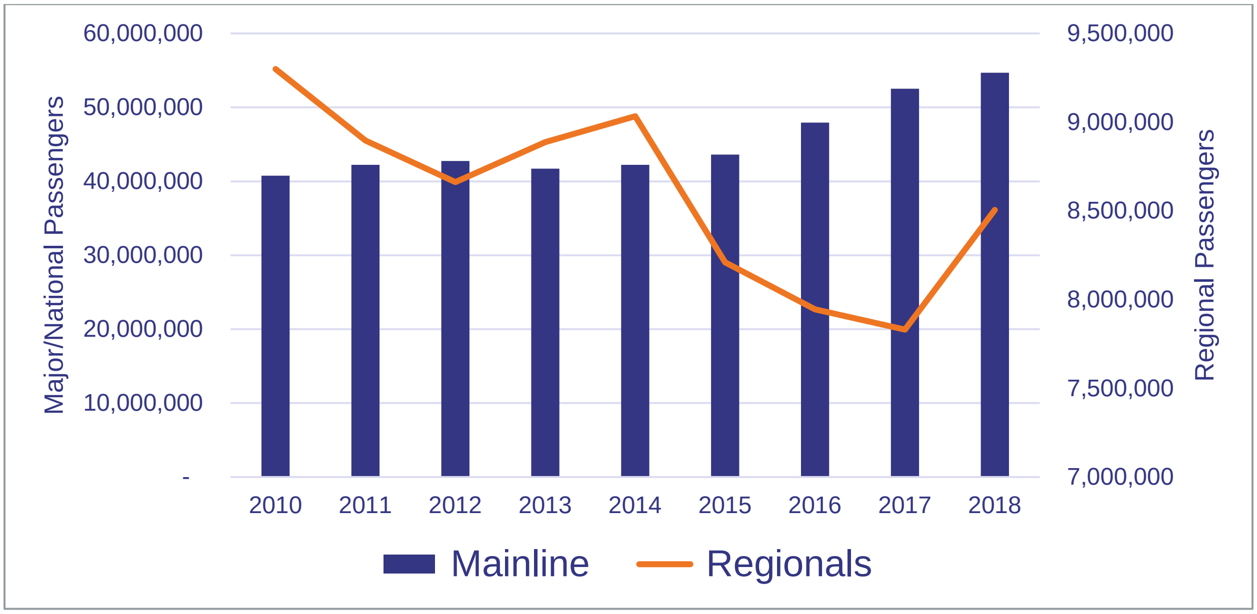
Sources: Form 41 and 298C, U.S. Department of Transportation, 2018

DEN serves as a feeder hub for regional operations within the state. United Express carriers serving DEN include Air Wisconsin Airlines Corporation, Trans States Airlines and its subsidiary GoJet Airlines,

[2] FAA Aerospace Forecasts, Fiscal Years 2019-2039
[3] Ibid

Republic, and SkyWest Airlines. Delta Air Lines operates its own fleet of regional aircraft. Compass Airlines and SkyWest Airlines also operate under contract as Delta Connection carriers. American Eagle also uses Compass Airlines at DEN. In 2018, regional airlines carried 8.5 million passengers in and out of DEN, representing 13.2 percent of total passengers.[4] That said, the national trends that show mainline passenger increases and regional carrier passenger declines persist at DEN as well and are shown in **Figure 7.11**.

Figure 7.11. Major/National and Regional Passengers at Denver International Airport[5]



Source: Denver International Airport, Passenger Traffic Reports, 2010-2018

7.3.1.3. Start-up Air Service Options Remain Active in Colorado

Colorado remains an active area for air service solutions in smaller markets. Boutique Airlines, flying a fleet of 9-seat Pilatus PC-12 aircraft, replaced Great Lakes Airlines when it ceased operations in March 2018. Boutique provides service as an Essential Air Service (EAS) carrier between DEN and Cortez Municipal (CEZ), between DEN and San Luis Valley Regional (ALS), and as a regularly scheduled carrier (non-EAS) between DEN and Telluride Regional Airport (TEX). Another scheduled charter operator, Denver Air Connection, is flying to and from TEX to DEN and Grand Junction Regional (GJT) to Centennial Airport (APA).

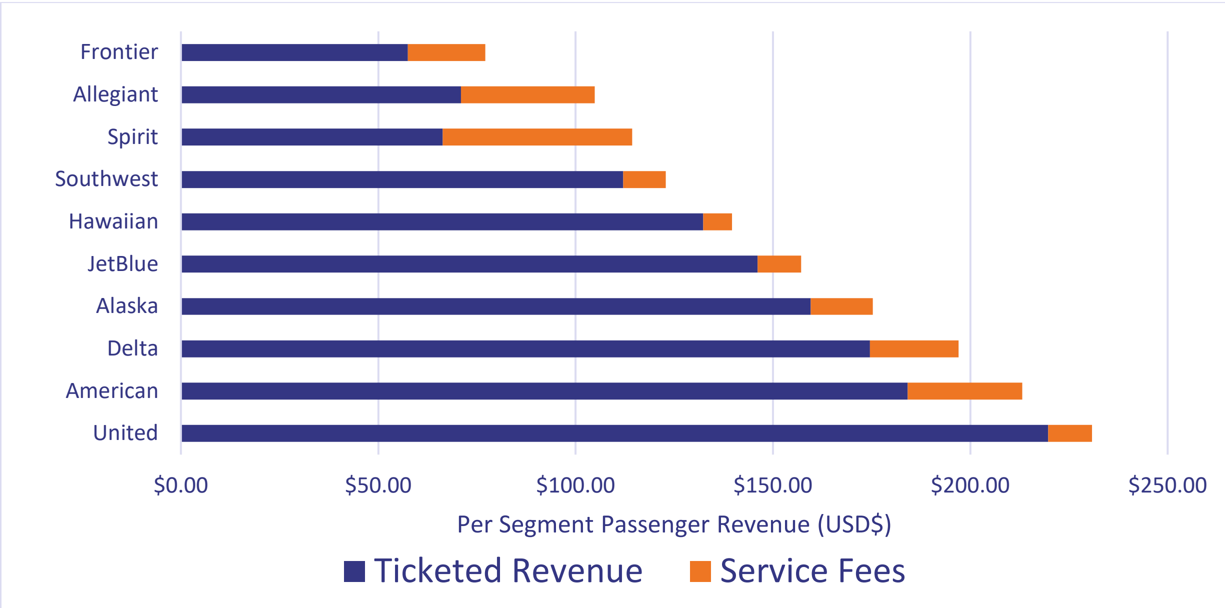
7.3.1.4. Add-on Fees Have Contributed to Net Revenues and Carrier Financial Performance

Profitability of mainline carriers has not been without competitive pressures from increased capacity primarily from the ULCCs, flat yields, and rising labor and equipment costs. Each of these factors plus volatile fuel prices have made it challenging for airlines to stabilize their financial performance. However, the use of add-on or ancillary service fees has contributed substantially to airline revenues. These include baggage fees, reservation change fees, priority boarding, fare locks, reserved seats, on-

[4] Denver International Airport, Passenger Traffic Report, December 2018
[5] Major/National carriers are DEN's designation for mainline carriers

board food, Wi-Fi, and other miscellaneous fees that generate revenues for the airlines. The ULCCs make greater use of the fees than other carriers, but as **Figure 7.12** shows, fees are a noticeable component of all airline passenger revenue.

Figure 7.12. The Importance of System Service Fees, Q3 2018



Source: Oliver Wyman, Airline Economic Analysis, 2018-2019

7.3.1.5. Outlook for Commercial Aviation

Each year the FAA prepares 20-year commercial aviation forecasts regarding domestic and international passenger enplanements, estimated load factors, aircraft sizes, and average trip lengths. The growth rates that drive these forecasts are important to the CASP forecasts and for that reason are presented in **Table 7.9** through **Table 7.12** as key background data for preparation of Colorado airport forecasts discussed later in this chapter.

Table 7.9. FAA Total U.S. Domestic and International Enplanement Forecasts

Enplanements (millions)	2018	2023	2028	2033	2038	CAGR 2018-2038
Domestic						
Mainline	627	690	736	806	884	1.7%
Regional	154	168	179	196	215	1.7%
Total Domestic	**781**	**858**	**915**	**1,002**	**1,099**	**1.7%**
International						
Mainline	96	106	125	147	174	3.0%
Regional	3	4	4	4	5	2.6%
Total International	**99**	**110**	**129**	**151**	**179**	**3.0%**
Total Enplanements	**880**	**968**	**1,044**	**1,153**	**1,278**	**1.9%**

Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

Table 7.10. FAA Seats per Aircraft Mile Forecasts

Seats/Aircraft Mile	2018	2023	2028	2033	2038	CAGR 2018-2038
Domestic						
Mainline	164.2	167.2	169.8	172	174.1	5.1%
Regional	63.8	67	69.6	72.2	74.9	0.8%
International						
Mainline	223.3	227.2	228.4	229.4	230.5	0.2%
Regional	64	72.3	73.8	75.3	76.8	0.9%

Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

Table 7.11. FAA Average Trip Length Forecasts

Average Trip Length	2018	2023	2028	2033	2038	CAGR 2018-2038
Domestic						
Mainline	922	935	948	961	974	3.5%
Regional	487	497	507	517	528	0.4%
International						
Mainline	2,817	2,934	2,913	2,877	2,826	0.0%
Regional	680	694	708	723	737	0.4%

Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

Table 7.12. FAA Load Factor Forecasts

Load Factors	2018	2023	2028	2033	2038	CAGR 2018-2038
Domestic						
Mainline	85.3%	86.2%	86.7%	87.0%	87.2%	0.5%
Regional	79.7%	80.6%	81.0%	81.2%	81.3%	0.1%
International						
Mainline	81.5%	81.5%	81.6%	81.3%	81.6%	0.0%
Regional	75.9%	76.7%	77.1%	77.3%	77.4%	0.1%

Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

7.3.2. Air Cargo

Shipment of mail, small packages, and heavy freight, all referred to as cargo, is intrinsically multi-modal. Cargo can be carried by truck, aircraft, rail, or ship or a combination of modes, depending on the origin and destination, cost preferences and schedule requirements set by the shipper. Because the shipping of cargo is highly price sensitive and competitive, there is some fluidity amongst modes as transportation companies build out their networks of service and respond to changes. These changes include economic activity, fluctuations in the price of fuel and other operational costs, competition, and for international cargo, security requirements, trade policies, and tariffs.

The movement of air cargo occurs using one of three types of carriers: all-cargo, integrated express carriers, or in the belly compartment of passenger airlines. All-cargo carriers are cargo specialists and typically operate airport-to-airport, on dedicated aircraft that are turboprops, regional jets, narrow-body or wide body jets. In Colorado, Alpine Air Express, Inc. carries both mail and cargo on small aircraft as does Bemidji Aviation Services. These airlines typically operate scheduled feeder cargo service from smaller airports into DEN on a contract basis and then at DEN, cargo may be transferred to a larger all-cargo carrier such Atlas Air, Inc. and its wholly owned subsidiary, Southern Air and shipped on these aircraft for longer haul routes. Integrated express operators rely on a hub and spoke system and move heavy cargo and small packages door-to-door, utilizing a combination of air and ground services to pick-up, transit, and deliver. FedEx and UPS are the largest integrated express carriers in Colorado, carrying 40 percent and 27 percent respectively, of all mail, freight, and express packages in 2018[6]. "Belly-cargo" services provided by passenger airlines can vary widely depending on size of aircraft in the fleet and the carrier's commitment to cargo lift. At DEN, United Airlines hauls most of the air mail and cargo handled by passenger airlines. A large amount of cargo is also carried by Southwest Airlines and several international carriers such as Lufthansa and British Airways.

Air cargo often consists of high-value shipments that are relatively lightweight and whose delivery is time sensitive. Common examples of air cargo are flowers and fish, electronic components, repair parts for the automotive and aerospace industries, medical devices, organs and tissue delivery. The amount of air cargo handled by an airport is closely related to market catchment size, local market industries, and airport facilities.

In Colorado, DEN serves as the principal gateway for air cargo and is in the top 25 U.S. airports for air cargo tonnage. Air freight and express packages account for 90 percent of the cargo that moves through DEN; air mail is the remaining 10 percent of air cargo. Most air mail is carried by passenger aircraft and primarily by United Airlines in Colorado. FedEx and UPS dominate as the all-cargo carriers. **Table 7.13** and **Figure 7.13** display the total pounds of cargo at DEN by type in recent years. Over the last 5 years, total air cargo weight has grown 18 percent with passenger airlines shouldering a greater proportion of air mail. Both passenger airlines and all cargo carriers have carried more freight and express, especially in 2017 and 2018.

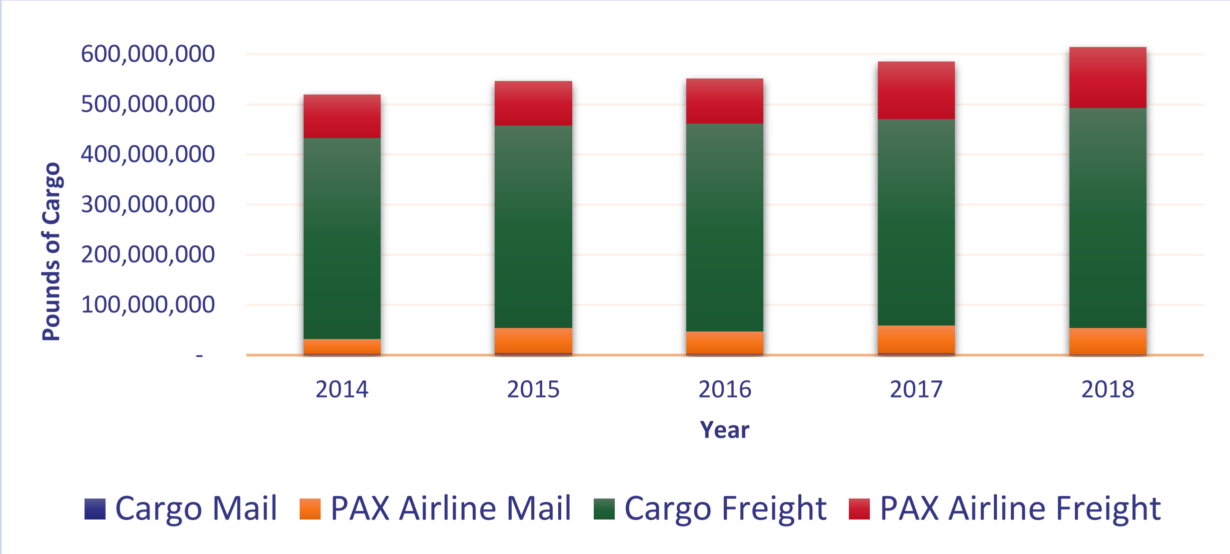
Table 7.13. Air Cargo - Denver International Airport by Type (Pounds)

Type of Cargo	2014	2015	2016	2017	2018
Cargo Mail	3,362,654	4,984,915	3,795,949	4,346,700	2,246,874
PAX Airline Mail	29,492,710	50,011,128	43,703,915	55,359,800	52,039,414
Cargo Freight & Express	400,639,141	403,852,252	414,580,754	411,440,250	439,344,417
PAX Airline Freight & Express	85,939,735	86,936,136	89,560,461	113,707,055	119,964,869

Source: Denver International Airport, Passenger and Cargo Traffic Reports, 2010-2018

[6] Denver International Airport Operations and Traffic Report, December 2018

Figure 7.13. Air Cargo - Denver International Airport (Pounds)



Source: Denver International Airport, Passenger and Cargo Traffic Reports, 2010-2018

While demand for air cargo is continuous and growing, expansion of Amazon Air (previously Prime Air) is introducing another significant participant in the time-sensitive, door-to-door market. Amazon is developing its own branded delivery service using aircraft, trucks, and drones. In April 2017, Amazon Air began operations at Cincinnati/Northern Kentucky International Airport (CVG) as its principal hub and plans to build out a property at the airport as a sorting facility and parking area for 100 aircraft. As of 2018, Amazon Air listed service from CVG to 24 airports, including DEN, using aircraft operated by Air Transport International, ABX Air, Atlas Air, and Southern Air.

Since online retailers have undoubtedly stimulated the desire for and expectations about time-definite package delivery, the entry of Amazon Air may result in shifts of market share amongst different integrated carriers in the future. For carriers such as FedEx, packages shipped for Amazon were priced at a discount. The long-term outlook for Amazon's program of self-delivery is unknown.

The FAA prepares air cargo forecasts that track positively with forecasted GDP. International air cargo is also influenced by security restrictions and trade policies, including tariffs. Other important factors that go into the air cargo forecasts include assumptions about the price of fuel and the distribution of air cargo between passenger aircraft and all-cargo aircraft.

In 2018, the domestic and international market for air cargo was 42.8 billion revenue ton miles (RTMs). By 2038, the FAA estimates that the air cargo market will grow to 83.9 billion RTMs or grow by an average annual rate of 3.4 percent. Domestic air cargo is expected to grow 1.8 percent annually and international RTMs are expected to grow at 4.2 percent per year. International air cargo RTMs represented 63 percent of the market in 2018 and are anticipated grow to 73 percent of RTMs by 2038. In 2018, the dominant carriers are the all-cargo (and integrated) carriers, hauling 90 percent of domestic air cargo revenue ton miles (RTMs) and 72 percent of international air cargo. Over the forecast period, all cargo carrier RTMs should increase market share in both the domestic and international markets as **Table 7.14** shows.

Table 7.14. FAA Air Cargo RTM Forecasts (Millions of RTMs)

Revenue Ton Miles (millions)	2018	2023	2028	2033	2038	CAGR 2018-2038
Domestic						
All-Cargo	14,182	15,571	16,791	18,573	20,467	1.9%
Passenger Carrier	1,580	1,662	1,716	1,814	1,925	1.0%
Total Domestic	**15,762**	**17,233**	**18,507**	**20,387**	**22,392**	**1.8%**
International						
All-Cargo	19,465	25,179	31,572	39,200	47,999	4.6%
Passenger Carrier	7,532	9,032	10,468	11,975	13,460	2.9%
Total International	**26,997**	**34,211**	**42,040**	**51,175**	**61,459**	**4.2%**
Total RTMs	**42,759**	**51,444**	**60,547**	**71,562**	**83,851**	**3.4%**

Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

7.3.3. General Aviation

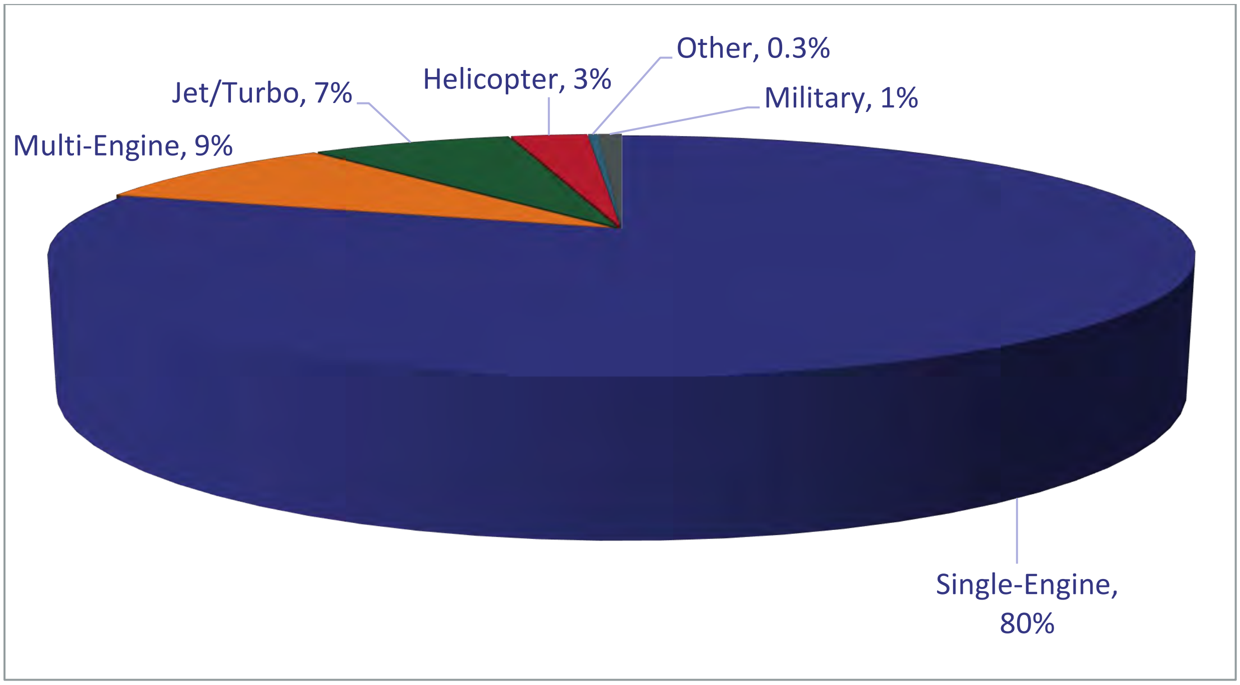
According to FAA and airport-reported sources, the GA community in Colorado is a major user of the Colorado airport system, performing an estimated 1.5 million total operations in 2018 or more than 59 percent of total Colorado airport operations.

GA in Colorado serves a diverse community that uses aircraft for:

- Aerial agricultural applications
- Aerial observation
- Air medical
- Business flying
- Aerial wildland firefighting
- Aerial search and rescue
- Fixed-wing external loads
- Instructional activities
- On-demand charters, air taxis, and air ambulance
- Personal flying
- Sightseeing

The 2018 GA fleet is between 4,613 and 5,208 based aircraft at Colorado airports depending on the informational source the data is gathered from. For the 2020 CASP, a baseline of 4,633 based aircraft was determined for 2018. The process for establishing the based aircraft baseline can be found in section **7.5 Based Aircraft Forecast**. Of the 2018 CASP based aircraft, most of these aircraft (80 percent) are single-engine aircraft as shown in **Figure 7.14**. Nine percent of the fleet are multi-engine and seven percent are jet aircraft. Single-engine aircraft make up a higher proportion of the Colorado fleet than the national average of active aircraft (61 percent). Less than one percent of 2018 CASP based aircraft are categorized as “other” which include ultra-lights, gliders, and experimental aircraft. Active aircraft are tracked by the FAA in an annual survey as an indicator of based aircraft in the U.S. as opposed to based aircraft which are typically tracked by airports.

Figure 7.14. Colorado's Airport-Reported GA Fleet by Type, 2018



Sources: 2018 Inventory & Data Form; FAA Master Record, 2019

Colorado airports with the largest number of based aircraft are shown in **Table 7.15**. These airports have 80 percent of based aircraft in the state. Front Range and resort airports are well represented in the list.

Table 7.15. Airports with the Largest Number of Airport-Reported Based Aircraft, 2018

Associated City	Airport Name	FAA ID	Based Aircraft
Denver	Centennial	APA	880
Colorado Springs	Meadow Lake	FLY	450
Denver	Colorado Air and Space Port	CFO	434
Denver	Rocky Mountain Metropolitan	BJC	425
Longmont	Vance Brand	LMO	294
Fort Collins/Loveland	Northern Colorado Regional	FNL	255
Colorado Springs	Colorado Springs Municipal	COS	231
Erie	Erie Municipal	EIK	207
Greeley	Greeley-Weld County	GXY	201
Grand Junction	Grand Junction Regional	GJT	129
Pueblo	Pueblo Memorial	PUB	129
Boulder	Boulder Municipal	BDU	116
Aspen	Aspen-Pitkin County	ASE	89
Steamboat Springs	Steamboat Springs	SBS	86
Montrose	Montrose Regional	MTJ	81

Associated City	Airport Name	FAA ID	Based Aircraft
Canon City	Fremont County	1V6	81
Eagle	Eagle County Regional	EGE	78
		Subtotal	**4,166**
		All Colorado Based Aircraft	**5,208**

Sources: 2018 Inventory & Data Form, FAA 5010 Master Record, 2019

7.3.3.1. Importance of Industry Trends to GA

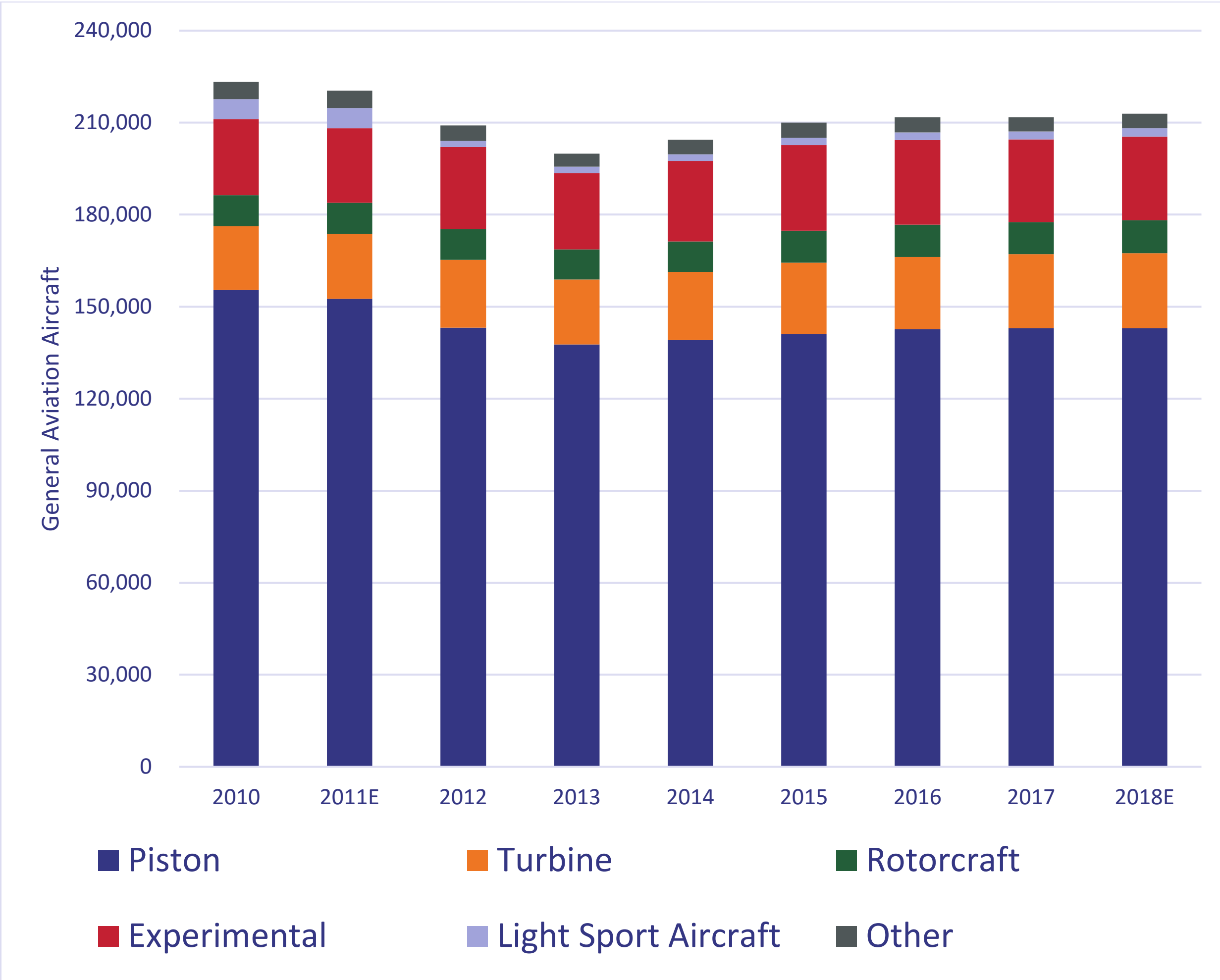
Because GA activity often occurs at statistically small and very small airports, forecasts of the future fleet and level of operations necessarily rely heavily on information about local economic activity and national analyses that examine how the economy, fuel prices, aircraft retirements and acquisitions, regulations, pilot demographics, and the cost of aircraft ownership influence GA activity. This section discusses how these trends are likely to influence GA activity in Colorado.

7.3.3.2. FAA Forecasts for GA Aircraft

Each year, the FAA updates its forecast of GA aircraft and operations based on economic trends and a survey of GA and Part 135 (on-demand charter) operators. These forecasts contain historical data and form a good foundation for statewide forecasts as the national perspective and datapoints make trends more discernable. **Figure 7.15** shows the composition of the active GA fleet in the U.S. from 2010 to 2018 and **Table 7.16** shows the average annual growth rate of the fleet for the same years.

In terms of active aircraft, the number of piston aircraft, both single-engine and multi-engine, continued to decline between 2010 and 2018. Jets, turbines, helicopters, and experimental aircraft are the standout growth segments in the fleet, however, from a pure number of aircraft perspective, the high number of piston aircraft continue to far outweigh all other categories of the GA fleet.

Figure 7.15. Historical Changes in the Active U.S. GA Fleet, 2010-2018



Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

Table 7.16. Average Annual Growth Rate by Active Aircraft Type, 2010-2018

Active Aircraft	Avg. Annual Growth, 2010-18
Single Engine	-0.9%
Multi-Engine	-2.4%
Turboprop	0.7%
Turbojet	3.0%
Piston Rotorcraft	-0.9%
Turbine Rotorcraft	1.6%
Experimental	1.2%
Light Sport Aircraft	-10.6%
Other	-2.3%
All Active GA Aircraft	**-0.6%**

Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

These historical trends carry across to the FAA forecasts where active and older piston aircraft are expected to retire at a faster rate than they are replaced. For this dominant segment of the Colorado GA fleet, the forecasts suggest continued decline of these aircraft, lower AvGas sales, and fewer hours flown. At the airport level, growth in this segment will be achieved through increased market share rather than actual expansion/growth of the piston aircraft submarket. Airports that serve business jets and helicopters, the main growth segments of the industry, are more likely to experience increased activity and fuel sales. **Table 7.17** shows the FAA forecasts for active aircraft, hours flown, and fuel consumed for total piston and turbine aircraft.

Table 7.17. Forecasts of Active Aircraft, Hours Flown, and Fuel Consumed, 2018-2039

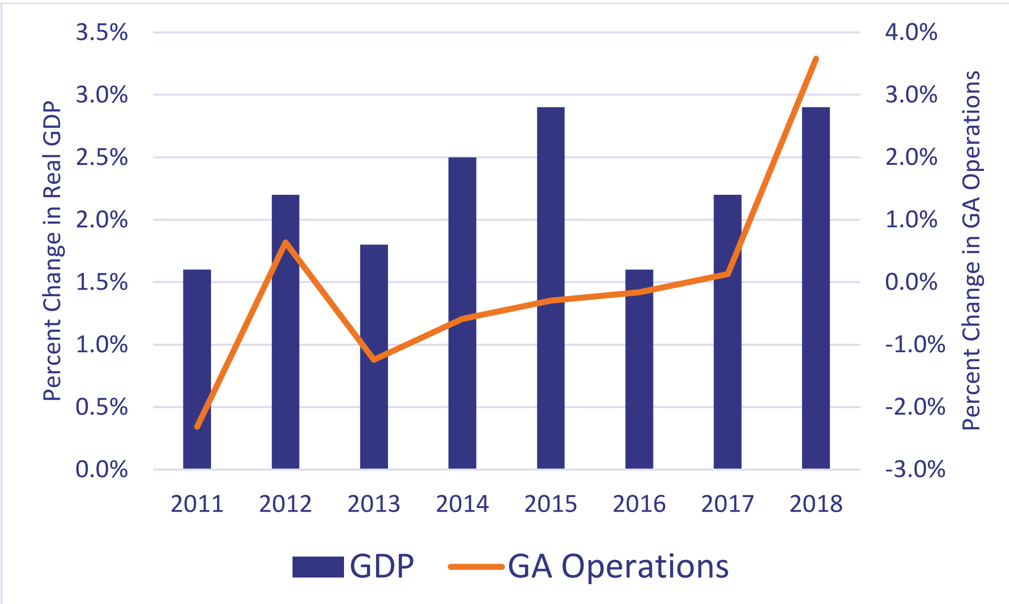
	Active Aircraft		Hours Flown (000's)		Gallons of Fuel Consumed (000's)		Hours Flown and AvGas Consumed Per Piston Aircraft		Hours Flown and Jet A Consumed Per Turbine Aircraft	
Year	Piston	Turbine	Piston	Turbine	AvGas	Jet Fuel	Hours	AvGas	Hours	Jet A
2018	146,260	31,880	14,404	9,578	208,000	1,613,000	98	1,422	300	50,596
2019	145,700	32,385	14,305	9,929	207,045	1,674,626	98	1,421	307	51,710
2029	133,085	38,580	12,792	12,802	191,000	2,089,000	96	1,435	332	54,147
2039	122,230	46,085	12,265	15,543	184,000	2,335,000	100	1,505	337	50,667
Average Annual Growth - 2019-2039										
	-0.9%	**1.8%**	**-.08%**	**2.3%**	**-0.6%**	**1.7%**	**0.1%**	**0.3%**	**0.6%**	**0.01%**

Source: FAA Aerospace Forecasts, Fiscal Years 2019-2039

7.3.3.3. A Vibrant Economy Has Even Lifted GA

The long-term and sustained declines of active piston aircraft have dampened expectations for this segment of the GA industry. However, a robust economy in the U.S. does have an impact on GA activity. GA experienced modest increases in aircraft sales and activity. Shipments of piston aircraft increased by 54 total aircraft over 2017 piston shipments; turbine shipments increased by 64 aircraft over the previous year. The number of GA operations were an even more positive indicator of growth, as GA operations increased by an estimated 915,000 or by 3.6 percent in 2018 over 2017 numbers at FAA and contract air traffic control towered airports. **Figure 7.16** tracks the percent annual change in real U.S. GDP and in GA aircraft operations at airports with FAA and contract air traffic control towers.

Figure 7.16. Annual Percent Change in Real GDP and GA Operations at Airports with FAA and Contract Air Traffic Control Towers



Sources: U.S. Bureau of Economic Analysis and FAA Aerospace Forecasts, Fiscal Years 2019-2039

It is anticipated that GA will continue to wax and wane with economic and climate conditions. Many rotorcraft and fixed wing aircraft support the oil and gas industry, air medical, forest management, search and rescue, and aerial wildland firefighting. Unfavorable pilot demographics, increasing costs of training and aircraft ownership, and competing recreational alternatives may dampen the recreational flying segment, but business aviation and fractional use of aircraft has a more positive outlook.

7.4. Enplanements Forecast

Enplanements are defined as boarded passengers on a commercial service flight. Future enplanement activity projected to take place at Colorado's commercial service airports is a significant indicator in assessing system-wide and commercial service airport-specific improvements. Enplanement activity affects how well commercial service airports are positioned to handle projected passenger demand in terms of their facilities such as terminal buildings, apron size, airfield designs, etc.

To gather the most consistent data on enplanement activity currently taking place across Colorado's commercial airports, information for annual enplanements was obtained from the FAA Air Carrier Activity Information System (ACAIS) and the FAA Terminal Area Forecast (TAF). FAA ACAIS data were used for all airports where data was available when Calendar Year 2018 data were published by FAA in July 2019. FAA ACAIS data were available for all but two airports, FNL and TEX. TAF data pulled in March 2019 were used for TEX enplanement data. TAF data pulled in January 2019 were used for FNL enplanement data. For ease of reference, enplanements in the following analyses are rounded to the nearest ten.

Table 7.18 displays enplanements for each airport by the reported source. There are 14 commercial service airports that handle enplanements for Colorado's aviation system. These airports served over 33.3 million enplanements in 2018 alone. The bulk of this activity occurred at DEN which facilitated 93.9 percent of enplanement activity system-wide. This amounts to over 31.3 million enplaned passengers occurring at DEN in 2018. Colorado Springs Municipal (COS) handled the next largest portion with over 846,000 enplanements, followed by Aspen-Pitkin County (ASE) which saw almost 288,000 enplaned passengers in 2018.

Table 7.18. 2018 Commercial Service Airports Enplanements by Source

Associated City	Airport Name	FAA ID	FAA TAF 2018 Enplanements	FAA ACAIS	Preferred Source	CASP 2018 Baseline
Alamosa	San Luis Valley Regional	ALS	6,800	7,030	FAA ACAIS	7,030
Aspen	Aspen-Pitkin County	ASE	272,540	287,900	FAA ACAIS	287,900
Colorado Springs	Colorado Springs Municipal	COS	873,630	846,080	FAA ACAIS	846,080
Cortez	Cortez Municipal	CEZ	7,400	7,720	FAA ACAIS	7,720
Denver	Denver International	DEN	30,849,920	31,363,570	FAA ACAIS	31,363,570
Durango	Durango-La Plata County	DRO	188,620	189,230	FAA ACAIS	189,230
Eagle	Eagle County Regional	EGE	170,910	175,950	FAA ACAIS	175,950
***Fort Collins/ Loveland**	Northern Colorado Regional	FNL	3,390	N/A	FAA TAF	3,390
Grand Junction	Grand Junction Regional	GJT	219,570	222,230	FAA ACAIS	222,230
Gunnison	Gunnison-Crested Butte Regional	GUC	36,830	36,480	FAA ACAIS	36,480
Hayden	Yampa Valley	HDN	100,260	100,550	FAA ACAIS	100,550
Montrose	Montrose Regional	MTJ	132,080	134,240	FAA ACAIS	134,240
Pueblo	Pueblo Memorial	PUB	8,970	10,450	FAA ACAIS	10,450
Telluride	Telluride Regional	TEX	1,060	N/A	FAA TAF	1,060
Commercial Service Airports Total			**32,871,980**	**33,381,430**		**33,385,880**

**Note: 2018 TAF enplanements were obtained from FNL's FAA-approved forecasts from the airport's master plan project.*
Sources: FAA TAF, pulled January and March 2019; FAA ACAIS, July 2019;
"Northern Colorado Regional Airport Master Plan," 2018

7.4.1. Enplanements Forecast Methodologies

Four different forecasting methodologies were utilized to determine the most reliable forecast estimates for the 14 commercial service airports. For the enplanement forecasts, a single preferred methodology was selected for each airport as there are varying conditions that impact the anticipated growth in activity. This is needed for airports such as FNL and TEX where air service has been inconsistent, however, for planning purposes it is assumed that the level of airline service will likely grow in the future. At FNL, Allegiant Airlines announced in September 2019 that they will return service to the airport in November, however that resumption of service has been postponed until at least January 2020 due to lack of air traffic control services at the airport before that time. TEX was impacted by the discontinuation of service by Great Lakes Airlines and has been served by Denver Air Connection since May 2019. It is anticipated that both airports will return to more normal levels of service than have been experienced in the past.

The forecast methodologies employed for enplanements in this section are described below.

7.4.1.1. Population Growth Rate by County

This method examines the direct relationship between enplanement activity and the population of the county in which the airport is located. Population growth rates were developed using data from Woods and Poole Economics county data and applied to the airport's CASP baseline for 2018 enplanements. This method assumes that the enplanement activity will reflect the county's population growth rate through the planning period.

7.4.1.2. Historical Terminal Area Forecast

Historical TAF data for enplanements was gathered for each airport spanning the past 5 years. Annual growth rates were determined from historic TAF data and then applied to the airport's CASP baseline for 2018 enplanements. Due to discontinued or infrequent enplanement activity occurring at some airports, the most recent 5-year period with consistent commercial service was used for the following airports:

- San Luis Valley Regional (ALS) – 2009 to 2013
- Northern Colorado Regional (FNL) – 2008 to 2012
- Telluride Regional (TEX) – 2009 to 2013

7.4.1.3. Airport Master Plans Growth Rate

This methodology utilizes the growth rates from the preferred enplanement forecasts from the most recent master plan for each airport. Extracted growth rates are applied to the airport's baseline 2018 enplanements used in the CASP to develop the enplanement estimates for the next 20 years.

7.4.1.4. Growth Rate by Service Type

Growth rates from the *FAA Aerospace Forecasts 2019-2039* for mainline and regional carriers were applied to the airport based on the type of service the airport currently has and what kind of service is likely over the near term based on current airline trends. Airports were assigned the following growth rates by type of service currently facilitated or expected to be operating at the airport during the 20-year planning period:

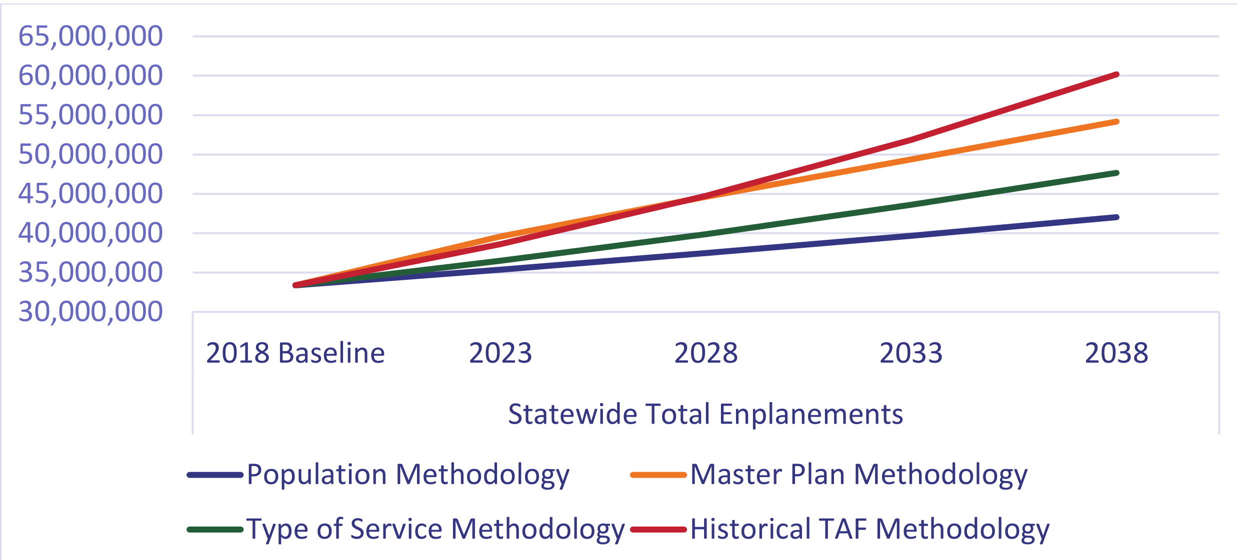
- Predominantly Mainline Service: 1.8% CAGR was applied
- Mix of Mainline and Regional Service: 1.7% CAGR was applied

- Only Regional Service: 1.6% CAGR was applied

7.4.2. Enplanements Forecast Results

Figure 7.17 demonstrates the enplanement projections for all four methodologies through 2038 utilizing the baseline enplanement data for 2018.

Figure 7.17. Enplanements Forecast by Methodology, 2018-2038



Sources: FAA TAF, pulled March 2019; FAA ACAIS, pulled July 2019; Kimley-Horn, 2019; "Northern Colorado Regional Airport Master Plan," 2018

System-wide, all four methodologies project growth throughout the planning horizon. The historical TAF methodology predicts enplanements to exceed 60 million in 2038. Remaining methodologies anticipate a more modest growth in the next 20 years. The master plan and service type methodology anticipate enplanements to approach 48 million and 55 million by 2038, respectively. The population methodology project enplanements to surpass 42 million over the next 20 years.

Table 7.19 demonstrates the results of the population and historical TAF methodologies applied to the CASP baseline for 2018. System-wide, the historical TAF methodology predicts the fastest rates of growth through the planning horizon with an anticipated 2.99 percent increase annually. The population growth rate by county methodology anticipates a slower rate of growth 1.16 percent CAGR for system-wide enplanements.

Airports estimated to experience the largest growth rate using the historical TAF methodologies are FNL at 7.30 percent and ASE at 3.87 percent annually. These two airports are anticipated to gain over 10,400 and 327,000 enplanements, respectively, over the 20-year planning period. The airport that is projected to gain the highest number of enplanements over the 20-year planning period is DEN with more than 25.6 million additional enplanements. Several airports are estimated to experience a decline in enplanements using the historical TAF methodology: Durango La-Plata County (DRO) at a 0.99 percent decline, Eagle County Regional (EGE) at a 1.56 percent decline, Pueblo Memorial (PUB) at 11.28 percent annual decline, and Telluride Regional (TEX) at a 1.87 percent decline.

Airports are expected to realize slower growth rates utilizing the population methodology over the next 20 years. TEX and Yampa Valley (HDN) are anticipated to experience the fastest growth at 2.17 and 1.80 percent CAGR, respectively. DEN is projected to add over 8 million more enplanements in 2038 at an annual rate of 1.15 percent. It is likely DEN's updated 2020 forecasts for the period 2033 and 2038 may increase substantially based on results from 2019 airline passenger traffic. Given the anticipated population growth in all of the counties in which commercial service airports operate in, there are no airports that are projected to experience a decline in enplanements in this methodology.

Table 7.19. Enplanements Forecasts - Population and Historical TAF Methodologies (Rounded to nearest 10)

Associated City	Airport Name	FAA ID	CASP 2018 Baseline Enplanements	Projections									
				2023		2028		2033		2038		CAGR 2018-2038	
				Population	Historical TAF	Population	Historical TAF	Population	Historical TAF	Population	Historical TAF	Population	Historical TAF
Alamosa	San Luis Valley Regional	ALS	7,030	7,420	7,780	7,840	8,600	8,270	9,510	8,730	10,520	1.09%	2.03%
Aspen	Aspen-Pitkin County	ASE	287,900	295,220	348,160	302,720	421,030	310,410	509,150	318,300	615,720	0.50%	3.87%
Colorado Springs	Colorado Springs Municipal	COS	846,080	907,970	929,060	974,400	1,020,190	1,045,690	1,120,260	1,122,190	1,230,140	1.42%	1.89%
Cortez	Cortez Municipal	CEZ	7,720	8,350	7,920	9,040	8,120	9,780	8,330	10,580	8,550	1.59%	0.51%
Denver	Denver International	DEN	31,363,570	33,201,770	36,404,460	35,147,710	42,255,540	37,207,690	49,047,030	39,388,410	56,930,080	1.15%	3.03%
Durango	Durango-La Plata County	DRO	189,230	204,870	180,050	221,820	171,310	240,160	163,010	260,030	155,100	1.60%	-0.99%
Eagle	Eagle County Regional	EGE	175,950	190,110	162,620	205,420	150,300	221,950	138,910	239,820	128,390	1.56%	-1.56%
Fort Collins/ Loveland	Northern Colorado Regional	FNL	3,390	3,650	4,820	3,940	6,850	4,240	9,740	4,570	13,850	1.50%	7.30%
Grand Junction	Grand Junction Regional	GJT	222,230	238,780	239,670	256,550	258,480	275,640	278,760	296,160	300,640	1.45%	1.52%
Gunnison	Gunnison-Crested Butte Regional	GUC	36,480	38,010	38,600	39,610	40,830	41,280	43,200	43,010	45,710	0.83%	1.13%
Hayden	Yampa Valley	HDN	100,550	109,950	105,580	120,230	110,870	131,470	116,420	143,760	122,250	1.80%	0.98%
Montrose	Montrose Regional	MTJ	134,240	145,990	196,550	158,760	287,790	172,650	421,380	187,760	616,970	1.69%	7.92%
Pueblo	Pueblo Memorial	PUB	10,450	11,000	5,750	11,570	3,160	12,170	1,740	12,810	960	1.02%	-11.28%
Telluride	Telluride Regional	TEX	1,060	1,180	970	1,320	880	1,460	800	1,630	730	2.17%	-1.87%
	Commercial Service Airports Total		**33,385,880**	**35,364,280**	**38,631,990**	**37,460,910**	**44,743,950**	**39,682,870**	**51,868,240**	**42,037,750**	**60,179,610**	**1.16%**	**2.99%**

Sources: Woods and Poole Economics, Inc., 2018; FAA TAF, pulled January and March 2019; FAA TAF, pulled July 2019; FAA ACAIS, July 2019; Kimley-Horn, 2019; "Northern Colorado Regional Airport Master Plan," 2018

Table 7.20 demonstrates the results of the airport master plan and service type methodologies applied to the CASP baseline for 2018 enplanements. System-wide enplanements are anticipated to grow under both methodologies over the next 20 years. The master plan and service type methodologies anticipate enplanements to increase at 2.45 and 1.80 percent, respectively. The number of enplanements is anticipated to exceed 54.1 million projected by the master plan methodology and 47.6 million projected by the service type methodology by 2038.

The service type methodology projects the COS, DEN, and FNL to experience the fastest growth rate in enplanements through the planning horizon. They are forecasted to grow at 1.80 percent annually and are anticipated to generate a combined total of 13.8 million additional enplanements by 2038. Through this methodology, all airports are anticipated to realize growth over the next 20 years.

The results of the master plan methodology are more tailored to each airport's projections. Under the airport master plan methodology, FNL and TEX are anticipated to experience the highest rates of growth at 17 percent and 10.25 percent annually. DEN is projected to add over 19.2 million enplanements by 2038 and is followed by COS with an additional 631,000 over the next 20 years.

Table 7.20. Enplanements Forecasts - Airport Master Plan and Service Type Methodologies (Rounded to nearest 10)

Associated City	Airport Name	FAA ID	CASP 2018 Baseline Enplanements	Projections									
				2023		2028		2033		2038		CAGR 2018-2038	
				Airport Master Plan	Service Type	Airport Master Plan	Service Type	Airport Master Plan	Service Type	Airport Master Plan	Service Type	Airport Master Plan	Service Type
Alamosa	San Luis Valley Regional	ALS	7,030	7,500	7,620	8,000	8,240	8,540	8,920	9,110	9,660	1.30%	1.60%
Aspen	Aspen-Pitkin County	ASE	287,900	314,650	313,220	343,870	340,770	375,820	370,730	410,730	403,340	1.79%	1.70%
Colorado Springs	Colorado Springs Municipal	COS	846,080	972,690	925,010	1,118,250	1,011,320	1,285,590	1,105,670	1,477,970	1,208,830	2.83%	1.80%
Cortez	Cortez Municipal	CEZ	7,720	8,540	8,360	9,450	9,050	10,450	9,800	11,560	10,610	2.04%	1.60%
***Denver**	Denver International	DEN	31,363,570	37,250,090	34,289,760	41,939,870	37,488,950	46,305,010	40,986,630	50,625,210	44,810,630	2.42%	1.80%
Durango	Durango-La Plata County	DRO	189,230	222,200	205,870	260,930	223,970	306,410	243,660	359,820	265,090	3.27%	1.70%
Eagle	Eagle County Regional	EGE	175,950	191,040	191,420	207,420	208,250	225,200	226,570	244,520	246,490	1.66%	1.70%
Fort Collins/Loveland	Northern Colorado Regional	FNL	3,390	48,430	3,700	56,830	4,050	66,680	4,430	78,250	4,840	17.00%	1.80%
Grand Junction	Grand Junction Regional	GJT	222,230	275,840	241,780	342,380	263,040	424,970	286,170	527,490	311,340	4.42%	1.70%
Gunnison	Gunnison-Crested Butte Regional	GUC	36,480	39,750	39,690	43,320	43,180	47,210	46,970	51,450	51,100	1.73%	1.70%
Hayden	Yampa Valley	HDN	100,550	115,520	109,390	132,710	119,010	152,470	129,480	175,160	140,860	2.81%	1.70%
Montrose	Montrose Regional	MTJ	134,240	144,830	146,050	156,250	158,890	168,580	172,860	181,880	188,060	1.53%	1.70%
Pueblo	Pueblo Memorial	PUB	10,450	12,000	11,310	13,775	12,250	15,815	13,260	18,157	14,360	2.80%	1.60%
Telluride	Telluride Regional	TEX	1,060	1,730	1,150	2,810	1,240	4,580	1,350	7,470	1,460	10.25%	1.60%
	Commercial Service Airports Total		**33,385,880**	**39,604,810**	**36,494,330**	**44,635,870**	**39,892,210**	**49,397,310**	**43,606,500**	**54,178,770**	**47,666,670**	**2.45%**	**1.80%**

**Notes: The forecasts for DEN were based on early 2018 data and an update was underway as of March 2020.*

Sources: FAA TAF, pulled January and March 2019; FAA ACAIS, July 2019; various Airport master plans, pulled between 2018-2019; Kimley-Horn, 2019; "Northern Colorado Regional Airport Master Plan," 2018

Due to the inconsistent nature of enplanement activity at some airports, it was deemed necessary to choose an enplanement forecasting methodology for each commercial service airport that would accurately take into account these inconsistencies. **Table 7.21** presents the preferred forecasting methodology that was selected for each airport and the results of the methodology. The system-wide enplanement numbers were taken by summing the results of the preferred methodologies.

FNL is anticipated to experience the highest growth in enplanements using the preferred methodology of the master plan growth rate, with a forecast rate of 17 percent annually. At that rate, FNL is projected to realize over 74,000 additional enplanements over the next 20 years. DEN is anticipated to experience the highest number of enplanements over the planning period at a rate of 2.42 percent and may experience over 19.2 million more enplanements by 2038. The slowest growth in enplanements is anticipated to occur at ALS at 1.30 percent with only 2,080 additional enplanements by 2038. The total number of enplanements for commercial service airports are projected to surpass 53.5 million by 2038 and grow at a rate of 2.39 percent annually.

Table 7.21. Preferred Enplanement Forecast Methodologies per Airport, 2018-2038

Associated City	Airport Name	FAA ID	Preferred Forecast Methodology	CASP 2018 Baseline Enplanements	2023	2028	2033	2038	CAGR 2018-2038
Alamosa	San Luis Valley Regional	ALS	Master Plan	7,030	7,500	8,000	8,540	9,110	1.30%
Aspen	Aspen-Pitkin County	ASE	Service Type	287,900	313,220	340,770	370,730	403,340	1.70%
Colorado Springs	Colorado Springs Municipal	COS	Service Type	846,080	925,010	1,011,320	1,105,670	1,208,830	1.80%
Cortez	Cortez Municipal	CEZ	Service Type	7,720	8,360	9,050	9,800	10,610	1.60%
****Denver**	Denver International	DEN	Master Plan	31,363,570	37,250,090	41,939,870	46,305,010	50,625,210	2.42%
Durango	Durango-La Plata County	DRO	Service Type	189,230	205,870	223,970	243,660	265,090	1.70%
Eagle	Eagle County Regional	EGE	Master Plan	175,950	191,040	207,420	225,200	244,520	1.66%
Fort Collins/Loveland	Northern Colorado Regional	FNL	Master Plan	3,390	48,430	56,830	66,680	78,250	17.00%
Grand Junction	Grand Junction Regional	GJT	Service Type	222,230	241,780	263,040	286,170	311,340	1.70%
Gunnison	Gunnison-Crested Butte Regional	GUC	Master Plan	36,480	39,690	43,180	46,970	51,100	1.70%
Hayden	Yampa Valley	HDN	Service Type	100,550	115,520	132,710	152,470	175,160	2.81%
Montrose	Montrose Regional	MTJ	Service Type	134,240	146,050	158,890	172,860	188,060	1.70%
Pueblo	Pueblo Memorial	PUB	Service Type	10,450	11,310	12,250	13,260	14,360	1.60%
***Telluride**	Telluride Regional	TEX	Service Type	1,060	1,730	2,810	4,580	7,470	10.26%
Commercial Service Airports Total				**33,385,880**	**39,505,600**	**44,410,110**	**49,011,600**	**53,592,450**	**2.39%**

**Note: Due to changes in commercial service activity at TEX, 2019 enplanements from two airlines have substantially increased enplanements to approximately 4,500. Forecasts for TEX utilize 2018 data and may not reflect potential impacts these changes may have on future enplanement activity.*

***Note: The forecasts for DEN were based on early 2018 data and an update was underway as of March 2020.*

Sources: FAA TAF, pulled January and March 2019; FAA ACAIS, pulled July 2019; various Airport master plans, pulled between 2018-2019; Kimley-Horn, 2019; "Northern Colorado Regional Airport Master Plan," 2018

7.5. Based Aircraft Forecast

The National Based Aircraft Inventory Program, most commonly known as BasedAircraft.com, is an online based aircraft system for all nonprimary airports in the National Plan of Integrated Airport Systems (NPIAS). Airport managers submit their based aircraft inventories to the website which are submitted for verification to the 5010 Inspection data. The FAA subsequently uses based aircraft inventory data from this source as an indicator to determine NPIAS eligibility, distribute federal funds, and to finalize necessary improvements system-wide. Other Primary airports and those not included in the NPIAS must rely on other sources for based aircraft data.

Due to this, based aircraft data were compiled from different sources to verify outlier data against multiple reports. Based aircraft inventory data from each airport were obtained from the following sources:

- FAA National Based Aircraft Inventory Program (BasedAircraft.com)
- FAA 5010-1 Master Record
- FAA TAF (pulled March 2019)
- 2018 Inventory & Data Form

These data were compared, however, through coordination with the FAA and CDOT Division of Aeronautics. A 2018 baseline for the CASP was selected based on the following criteria:

Primary Commercial Service and non-NPIAS GA Airports:

- 2018 Inventory & Data Form based aircraft data were used for these airports.
- If 2018 Inventory & Data Form based aircraft information was not available, the airport's FAA 5010-1 Master Record was used instead.

Nonprimary Commercial Service and GA NPIAS Airports:

- FAA National Based Aircraft Inventory data were used for these airports.

Table 7.22 displays based aircraft by source and the final 2018 baseline used as the foundation for all CASP based aircraft forecasts through the planning horizon. From the sources that are available to represent system-wide based aircraft totals, airport-reported based aircraft comprise the highest count at 5,208, while the 5010 records report the smallest number at 4,613.

Table 7.22. 2018 Based Aircraft Inventory by Source

Associated City	Airport Name	FAA ID	FAA 5010 Master Record Based Aircraft	FAA TAF Based Aircraft	2018 Inventory & Data Form	FAA National Based Aircraft Inventory	FAA National Based Aircraft - Date of Last Edit	FAA National Based Aircraft - Date Confirmed	Preferred Source	CASP 2018 Baseline
Commercial Service										
Alamosa	San Luis Valley Regional	ALS	38	39	38	38	12/28/2017	Not Provided	National Based Aircraft Registry	38
Aspen	Aspen-Pitkin County	ASE	95	105	89	No data	No data	No data	2018 Inventory & Data Form	89
Colorado Springs	Colorado Springs Municipal	COS	231	247	231	No data	No data	No data	2018 Inventory & Data Form	231
Cortez	Cortez Municipal	CEZ	36	36	31	27	2/19/2019	2/19/2019	National Based Aircraft Registry	27
Denver	Denver International	DEN	2	2	2	No data	No data	No data	2018 Inventory & Data Form	2
Durango	Durango-La Plata County	DRO	63	70	63	No data	No data	No data	2018 Inventory & Data Form	63
Eagle	Eagle County Regional	EGE	89	93	91	No data	No data	No data	2018 Inventory & Data Form	91
Fort Collins/Loveland	Northern Colorado Regional	FNL	255	255	255	241	12/19/2018	12/28/2017	National Based Aircraft Registry	241
Grand Junction	Grand Junction Regional	GJT	125	114	126	No data	No data	No data	2018 Inventory & Data Form	126
Gunnison	Gunnison-Crested Butte Regional	GUC	25	25	31	No data	No data	No data	2018 Inventory & Data Form	31
Hayden	Yampa Valley	HDN	9	7	12	No data	No data	No data	2018 Inventory & Data Form	12
Montrose	Montrose Regional	MTJ	81	78	81	No data	No data	No data	2018 Inventory & Data Form	81
Pueblo	Pueblo Memorial	PUB	132	136	129	124	12/7/2018	12/7/2018	National Based Aircraft Registry	124
Telluride	Telluride Regional	TEX	35	35	44	27	2/9/2017	2/1/2011	National Based Aircraft Registry	27
General Aviation										
Akron	Colorado Plains Regional	AKO	8	8	14	7	Not Provided	Not Provided	National Based Aircraft Registry	7
Blanca	Blanca	05V	0	No data	0	No data	No data	No data	2018 Inventory & Data Form	0
Boulder	Boulder Municipal	BDU	116	117	116	48	5/7/2010	11/8/2011	National Based Aircraft Registry	48
Brush	Brush Municipal	7V5	8	No data	5	No data	No data	No data	2018 Inventory & Data Form	5
Buena Vista	Central Colorado Regional	AEJ	12	13	4	2	4/17/2008	Not Provided	National Based Aircraft Registry	2
Burlington	Kit Carson County	ITR	19	19	23	20	1/24/2019	1/24/2019	National Based Aircraft Registry	20
Canon City	Fremont County	1V6	87	93	81	76	4/24/2018	4/24/2018	National Based Aircraft Registry	76
Center	Leach	1V8	5	No data	4	No data	No data	No data	2018 Inventory & Data Form	4
Colorado Springs	Meadow Lake	FLY	420	420	450	403	12/31/2018	12/31/2018	National Based Aircraft Registry	403
Craig	Craig-Moffat	CAG	24	24	25	20	11/29/2017	11/29/2017	National Based Aircraft Registry	20
Creede	Mineral County Memorial	C24	3	No data	10	No data	No data	No data	2018 Inventory & Data Form	10
Del Norte	Astronaut Kent Rominger	RCV	32	No data	39	No data	No data	No data	2018 Inventory & Data Form	39
Delta	Blake Field	AJZ	48	42	65	46	7/16/2018	7/16/2018	National Based Aircraft Registry	46
Denver	Centennial	APA	522	803	880	878	12/21/2018	12/21/2018	National Based Aircraft Registry	878
Denver	Colorado Air and Space Port	CFO	393	399	434	353	8/27/2018	5/22/2017	National Based Aircraft Registry	353
Denver	Rocky Mountain Metropolitan	BJC	425	432	425	449	1/6/2019	1/18/2018	National Based Aircraft Registry	449
Eads	Eads Municipal	9V7	4	No data	9	No data	No data	No data	2018 Inventory & Data Form	9
Erie	Erie Municipal	EIK	175	175	207	138	2/8/2017	2/8/2017	National Based Aircraft Registry	138
Fort Morgan	Fort Morgan Municipal	FMM	33	33	32	31	9/24/2018	9/26/2017	National Based Aircraft Registry	31

Associated City	Airport Name	FAA ID	FAA 5010 Master Record Based Aircraft	FAA TAF Based Aircraft	2018 Inventory & Data Form	FAA National Based Aircraft Inventory	FAA National Based Aircraft - Date of Last Edit	FAA National Based Aircraft - Date Confirmed	Preferred Source	CASP 2018 Baseline
Glenwood Springs	Glenwood Springs Municipal	GWS	69	No data	69	No data	No data	No data	2018 Inventory & Data Form	69
Granby	Granby-Grand County	GNB	21	21	24	15	7/5/2016	10/25/2017	National Based Aircraft Registry	15
Greeley	Greeley-Weld County	GXY	201	202	201	137	2/8/2019	1/22/2009	National Based Aircraft Registry	137
Haxtun	Haxtun Municipal	17V	1	No data	1	No data	No data	No data	2018 Inventory & Data Form	1
Holly	Holly	K08	5	No data	1	No data	No data	No data	2018 Inventory & Data Form	1
Holyoke	Holyoke	HEQ	9	9	15	9	6/12/2017	Not Provided	National Based Aircraft Registry	9
Julesburg	Julesburg Municipal	7V8	10	No data	5	No data	No data	No data	2018 Inventory & Data Form	5
Kremmling	Mc Elroy Airfield	20V	22	22	22	15	7/1/2008	7/1/2008	National Based Aircraft Registry	15
La Junta	La Junta Municipal	LHX	13	13	23	10	5/15/2017	4/15/2008	National Based Aircraft Registry	10
La Veta	Cuchara Valley	07V	2	No data	2	No data	No data	No data	2018 Inventory & Data Form	2
Lamar	Lamar Municipal	LAA	22	22	28	27	12/15/2018	11/28/2018	National Based Aircraft Registry	27
Las Animas	Las Animas-Bent County	7V9	9	No data	11	No data	No data	No data	2018 Inventory & Data Form	11
Leadville	Lake County	LXV	5	5	5	5	10/25/2017	12/30/2015	National Based Aircraft Registry	5
Limon	Limon Municipal	LIC	23	23	22	20	2/23/2017	1/10/2018	National Based Aircraft Registry	20
Longmont	Vance Brand	LMO	300	300	294	274	12/4/2017	12/4/2017	National Based Aircraft Registry	274
Meeker	Meeker/Coulter Field	EEO	11	11	10	10	10/30/2017	8/9/2013	National Based Aircraft Registry	10
Monte Vista	Monte Vista Municipal	MVI	15	15	15	15	6/26/2008	6/26/2008	National Based Aircraft Registry	15
Nucla	Hopkins Field	AIB	10	10	10	10	9/17/2013	9/17/2013	National Based Aircraft Registry	10
Pagosa Springs	Stevens Field	PSO	36	32	40	40	5/24/2018	5/24/2018	National Based Aircraft Registry	40
Paonia	North Fork Valley	7V2	23	No data	20	No data	No data	No data	2018 Inventory & Data Form	20
Rangely	Rangely	4V0	16	16	19	13	Not Provided	Not Provided	National Based Aircraft Registry	13
Rifle	Rifle Garfield County	RIL	48	50	48	17	9/12/2008	9/12/2008	National Based Aircraft Registry	17
Saguache	Saguache Municipal	04V	0	No data	0	No data	No data	No data	2018 Inventory & Data Form	0
Salida	Harriet Alexander Field	ANK	27	27	41	15	9/7/2016	3/23/2010	National Based Aircraft Registry	15
Springfield	Springfield Municipal	8V7	10	No data	10	No data	No data	No data	2018 Inventory & Data Form	10
Steamboat Springs	Steamboat Springs	SBS	51	53	86	59	12/29/2017	12/29/2017	National Based Aircraft Registry	59
Sterling	Sterling Municipal	STK	33	34	33	30	6/22/2017	6/22/2017	National Based Aircraft Registry	30
Trinidad	Perry Stokes	TAD	11	11	20	1	Not Provided	10/21/2015	National Based Aircraft Registry	1
Walden	Walden-Jackson County	33V	10	No data	3	No data	No data	No data	2018 Inventory & Data Form	3
Walsenburg	Spanish Peaks Airfield	4V1	10	10	19	18	1/3/2019	1/3/2019	National Based Aircraft Registry	18
Westcliffe	Silver West	C08	11	No data	24	No data	No data	No data	2018 Inventory & Data Form	24
Wray	Wray Municipal	2V5	16	16	27	14	5/17/2016	Not Provided	National Based Aircraft Registry	14
Yuma	Yuma Municipal	2V6	13	13	14	12	12/26/2012	12/26/2012	National Based Aircraft Registry	12
	Commercial Service Airports Total		**1,216**	**1,242**	**1,223**	**457**				**1,183**
	General Aviation Airports Total		**3,397**	**3,493**	**3,985**	**3,237**				**3,450**
	System-wide Total		**4,613**	**4,735**	**5,208**	**3,694**				**4,633**

Sources: 2018 Inventory & Data Form; FAA Master Record, 2019; FAA TAF, pulled March 2019; FAA National Based Aircraft Inventory, pulled February 2019

7.5.1. Based Aircraft Forecast Methodologies

Three different forecasting methodologies were utilized to determine the most reliable forecast estimates for based aircraft. Each methodology was applied to the 2018 baseline data previously established for the CASP. Explanation of methodologies used for CASP based aircraft forecasts are below.

7.5.1.1. Population Growth by County

This method examines the direct relationship between based aircraft and the population of the county in which the airport operates. Similar to the enplanements forecasts, population growth rates were developed using data from Woods and Poole Economics county data and applied to the airport's 2018 baseline for based aircraft in the CASP. This method assumes that the based aircraft changes will reflect the county's population growth rate through the planning period. To note, multiple airports may operate within the same county, these airports were given the same county growth rates.

7.5.1.2. National Active Fleet

This approach is a top down market share methodology that assumes a relationship between each airport's share or ratio of the system's total based aircraft fleet through the planning horizon. The FAA's projection for growth in the national GA active fleet was applied to Colorado's statewide based aircraft for 2018 to develop the system-wide totals for the 5, 10, 15, and 20-year intervals. Each airport's share of the statewide total for 2018 was then applied to the system-wide forecast of future based aircraft for each interval. The airport's proportional share of the system's total based aircraft fleet is assumed to remain constant over the 20-year period.

7.5.1.3. Airport Fleet Mix Growth Rate

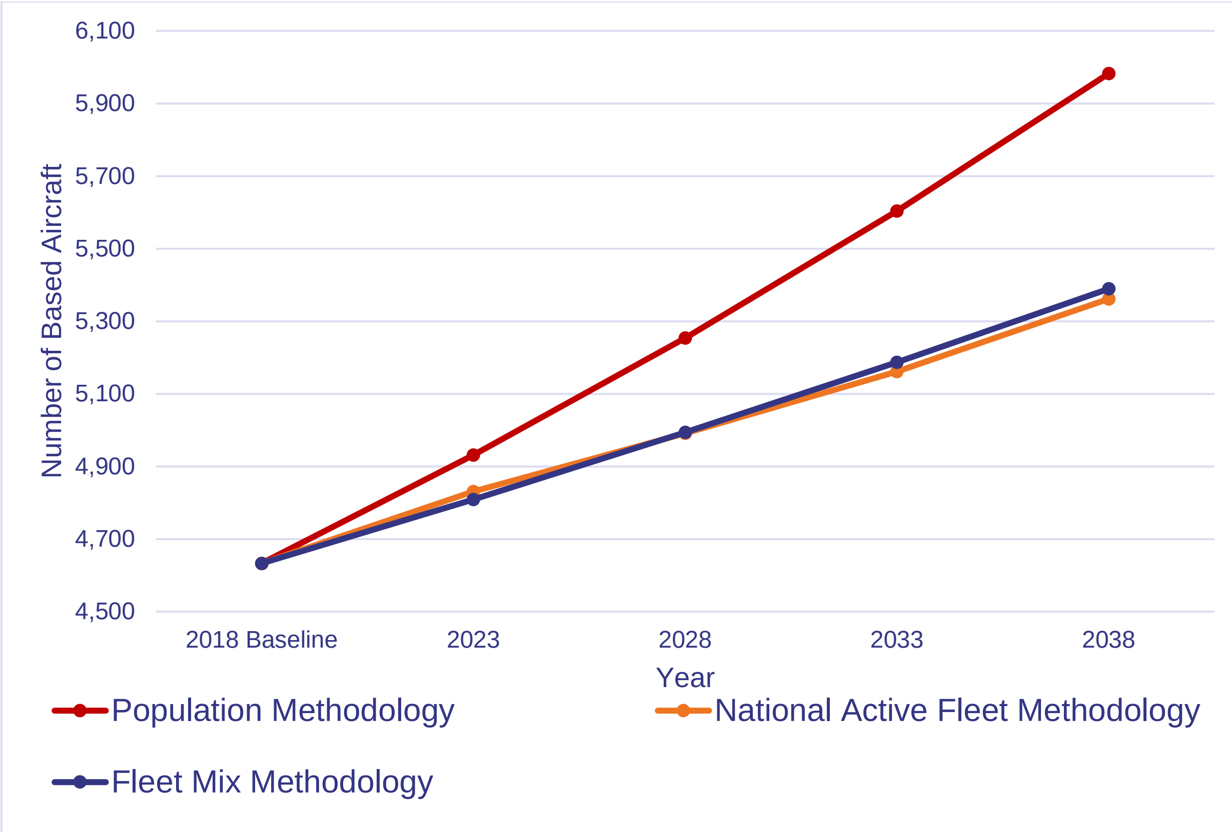
This methodology focuses on each airport's current based aircraft fleet mix to determine future growth rates of total based aircraft. Growth rates derived from the *FAA Aerospace Forecasts 2019-2039* by aircraft type were evaluated and considered to develop a blended growth rate based on each airport's 2018 airport-reported based aircraft fleet mix. The blended growth rates that were developed and applied to airports to develop future based aircraft forecasts are as follows:

- If the airport's percent of single-engine based aircraft is 90 percent or higher, then a 0.2 percent CAGR was applied.
- If the airport's percent of single-engine based aircraft is between 85 and 90 percent, and the airport has any multi-engine based aircraft, then a 0.5 percent CAGR was applied.
- If the airport's percent of single-engine based aircraft is less than 85 percent and if they have any helicopter and/or jet/turboprop based aircraft, then a 1.0 percent CAGR was applied.

7.5.2. Based Aircraft Forecasts Results

Figure 7.18 illustrates the results of the three methodologies and statewide based aircraft through 2038. The population growth rate methodology predicts the fastest growth rate, compared to the very similar results for both the national active fleet and fleet mix growth rate approaches.

Figure 7.18. Based Aircraft Forecast Comparison, 2018-2038



Sources: Woods and Poole Economics, Inc., 2018; FAA Aerospace Forecasts, 2019-2039; 2018 Inventory & Data Form; Kimley-Horn, 2019

Results from the three different forecasting methodologies were compared to select the preferred methodology that best represents future estimates of based aircraft system-wide. The airport fleet mix growth rate was determined as the preferred methodology for based aircraft projections. This approach is more closely tailored to each airport's fleet mix makeup and provides a more accurate representation of how individual airports may likely grow based on national growth projections of individual types of based aircraft. This preferred methodology results in a 0.76 percent annual rate using the FAA 2018 based aircraft data. The largest growth rates (1.0 percent) in this methodology are anticipated to occur at commercial service airports, estimating an additional 260 based aircraft in 2038. Under the preferred airport fleet mix methodology, GA airports are estimated to realize an additional 496 based aircraft over the 20-year planning horizon.

Table 7.23 shows the application of the three forecast methodologies to the FAA 2018 based aircraft data, the results of the preferred methodology is highlighted in light blue. All three based aircraft forecast methodologies show system-wide growth in based aircraft through the 20-year planning horizon, ranging from 0.73 percent from the National Active Fleet methodology to 1.29 percent from the population growth by county methodology. Depending on the methodology, between 729 and 1,350 additional based aircraft are anticipated in Colorado over the next 20 years.

Table 7.23. Based Aircraft Forecasts, 2018-2038

Associated City	Airport Name	FAA ID	CASP 2018 Based Aircraft	Projections														
				2023			2028			2033			2038			CAGR 2018-2038		
				Population (Pop.)	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix
Commercial Service																		
Alamosa	**San Luis Valley Regional**	ALS	38	40	40	40	42	41	42	45	42	44	47	44	46	1.09%	0.73%	1.00%
Aspen	**Aspen-Pitkin County**	ASE	89	91	93	94	94	96	98	96	99	103	98	103	109	0.50%	0.73%	1.00%
Colorado Springs	**Colorado Springs Municipal**	COS	231	248	241	243	267	249	255	286	257	268	308	267	282	1.44%	0.73%	1.00%
Cortez	**Cortez Municipal**	CEZ	27	29	28	28	32	29	30	34	30	31	37	31	33	1.59%	0.73%	1.00%
Denver	**Denver International**	DEN	2	2	2	2	2	2	2	2	2	2	2	2	2	1.03%	0.73%	0.00%
Durango	**Durango-La Plata County**	DRO	63	68	66	66	74	68	70	80	70	73	87	73	77	1.60%	0.73%	1.00%
Eagle	**Eagle County Regional**	EGE	91	98	95	96	106	98	101	115	101	106	124	105	111	1.56%	0.73%	1.00%
Fort Collins/ Loveland	**Northern Colorado Regional**	FNL	241	260	251	253	280	260	266	302	268	280	325	279	294	1.51%	0.73%	1.00%
Grand Junction	**Grand Junction Regional**	GJT	126	135	131	132	145	136	139	156	140	146	168	146	154	1.45%	0.73%	1.00%
Gunnison	**Gunnison-Crested Butte Regional**	GUC	31	32	32	33	34	33	34	35	35	36	37	36	38	0.83%	0.73%	1.00%
Hayden	**Yampa Valley**	HDN	12	13	13	13	14	13	13	16	13	14	17	14	15	1.80%	0.73%	1.00%
Montrose	**Montrose Regional**	MTJ	81	88	84	85	96	87	89	104	90	94	113	94	99	1.69%	0.73%	1.00%
Pueblo	**Pueblo Memorial**	PUB	124	130	129	130	137	134	137	144	138	144	152	144	151	1.02%	0.73%	1.00%
Telluride	**Telluride Regional**	TEX	27	30	28	28	33	29	30	37	30	31	42	31	33	2.17%	0.73%	1.00%
General Aviation																		
Akron	**Colorado Plains Regional**	AKO	7	7	7	7	7	8	7	7	8	7	7	8	7	0.08%	0.73%	0.20%
Blanca	**Blanca**	05V	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.16%	0.73%	0.00%
Boulder	**Boulder Municipal**	BDU	48	50	50	49	53	52	50	56	53	52	58	56	53	0.99%	0.73%	0.50%
Brush	**Brush Municipal**	7V5	5	5	5	5	6	5	5	6	6	5	6	6	5	1.18%	0.73%	0.20%
Buena Vista	**Central Colorado Regional**	AEJ	2	2	2	2	2	2	2	2	2	2	2	2	2	0.91%	0.73%	0.20%
Burlington	**Kit Carson County**	ITR	20	21	21	20	21	22	20	22	22	21	23	23	21	0.63%	0.73%	0.20%
Canon City	**Fremont County**	1V6	76	77	79	78	79	82	80	80	85	82	81	88	84	0.34%	0.73%	0.50%
Center	**Leach**	1V8	4	4	4	4	4	4	4	4	4	4	4	5	4	-0.16%	0.73%	0.20%
Colorado Springs	**Meadow Lake**	FLY	403	433	420	407	465	434	411	499	449	415	536	466	419	1.44%	0.73%	0.20%
Craig	**Craig-Moffat**	CAG	20	20	21	20	20	22	20	20	22	21	20	23	21	0.12%	0.73%	0.20%
Creede	**Mineral County Memorial**	C24	10	10	10	10	11	11	10	11	11	10	11	12	10	0.69%	0.73%	0.20%
Del Norte	**Astronaut Kent Rominger**	RCV	39	39	41	39	39	42	40	39	43	40	39	45	41	-0.02%	0.73%	0.20%
Delta	**Blake Field**	AJZ	46	48	48	46	50	50	47	52	51	47	55	53	48	0.87%	0.73%	0.20%
Denver	**Centennial**	APA	878	928	915	923	980	946	970	1,036	978	1,019	1,095	1,016	1,071	1.11%	0.73%	1.00%

Associated City	Airport Name	FAA ID	CASP 2018 Based Aircraft	Projections														
				2023			2028			2033			2038			CAGR 2018-2038		
				Population (Pop.)	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix
Denver	Colorado Air and Space Port	CFO	353	386	368	371	422	380	390	461	393	410	504	409	431	1.80%	0.73%	1.00%
Denver	Rocky Mountain Metropolitan	BJC	449	462	468	472	474	484	496	488	500	521	501	520	548	0.55%	0.73%	1.00%
Eads	Eads Municipal	9V7	9	9	9	9	8	10	9	8	10	9	8	10	9	-0.60%	0.73%	0.20%
Erie	Erie Municipal	EIK	138	159	144	139	183	149	141	211	154	142	244	160	144	2.88%	0.73%	0.20%
Fort Morgan	Fort Morgan Municipal	FMM	31	33	32	31	35	33	32	37	35	32	39	36	32	1.18%	0.73%	0.20%
Glenwood Springs	Glenwood Springs Municipal	GWS	69	75	72	71	83	74	73	90	77	74	99	80	76	1.81%	0.73%	0.50%
Granby	Granby-Grand County	GNB	15	16	16	15	18	16	16	19	17	16	20	17	17	1.57%	0.73%	0.50%
Greeley	Greeley-Weld County	GXY	137	158	143	144	182	148	151	210	153	159	242	159	167	2.88%	0.73%	1.00%
Haxtun	Haxtun Municipal	17V	1	1	1	1	1	1	1	1	1	1	1	1	1	-0.05%	0.73%	0.20%
Holly	Holly	K08	1	1	1	1	1	1	1	1	1	1	1	1	1	-0.13%	0.73%	0.20%
Holyoke	Holyoke	HEQ	9	9	9	9	9	10	9	9	10	9	9	10	9	-0.05%	0.73%	0.20%
Julesburg	Julesburg Municipal	7V8	5	5	5	5	5	5	5	5	6	5	5	6	5	-0.13%	0.73%	0.20%
Kremmling	Mc Elroy Airfield	20V	15	16	16	15	18	16	15	19	17	15	20	17	16	1.57%	0.73%	0.20%
La Junta	La Junta Municipal	LHX	10	10	10	10	10	11	10	9	11	10	9	12	10	-0.40%	0.73%	0.20%
La Veta	Cuchara Valley	07V	2	2	2	2	2	2	2	2	2	2	2	2	2	-0.32%	0.73%	0.20%
Lamar	Lamar Municipal	LAA	27	27	28	27	27	29	28	26	30	28	26	31	28	-0.13%	0.73%	0.20%
Las Animas	Las Animas-Bent County	7V9	11	11	11	11	11	12	11	11	12	11	11	13	11	-0.14%	0.73%	0.20%
Leadville	Lake County	LXV	5	5	5	5	5	5	5	6	6	5	6	6	5	0.72%	0.73%	0.20%
Limon	Limon Municipal	LIC	20	21	21	20	23	22	20	24	22	21	25	23	21	1.21%	0.73%	0.20%
Longmont	Vance Brand	LMO	274	288	286	277	302	295	280	318	305	282	334	317	285	0.99%	0.73%	0.20%
Meeker	Meeker/Coulter Field	EEO	10	10	10	10	10	11	10	11	11	10	11	12	10	0.39%	0.73%	0.20%
Monte Vista	Monte Vista Municipal	MVI	15	15	16	15	15	16	15	15	17	15	15	17	16	-0.02%	0.73%	0.20%
Nucla	Hopkins Field	AIB	10	11	10	10	12	11	10	13	11	10	14	12	10	1.69%	0.73%	0.20%
Pagosa Springs	Stevens Field	PSO	40	44	42	40	48	43	41	53	45	41	58	46	42	1.88%	0.73%	0.20%
Paonia	North Fork Valley	7V2	20	21	21	20	22	22	20	23	22	21	24	23	21	0.87%	0.73%	0.20%
Rangely	Rangely	4V0	13	13	14	13	14	14	13	14	14	13	14	15	14	0.39%	0.73%	0.20%
Rifle	Rifle Garfield County	RIL	17	19	18	18	20	18	19	22	19	20	24	20	21	1.81%	0.73%	1.00%
Saguache	Saguache Municipal	04V	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.16%	0.73%	0.00%
Salida	Harriet Alexander Field	ANK	15	16	16	16	16	16	17	17	17	17	18	17	18	0.91%	0.73%	1.00%
Springfield	Springfield Municipal	8V7	10	10	10	10	9	11	10	9	11	10	9	12	10	-0.74%	0.73%	0.20%
Steamboat Springs	Steamboat Springs	SBS	59	65	62	60	71	64	62	77	66	64	84	68	65	1.80%	0.73%	0.50%
Sterling	Sterling Municipal	STK	30	31	31	31	33	32	32	34	33	32	36	35	33	0.91%	0.73%	0.50%
Trinidad	Perry Stokes	TAD	1	1	1	1	1	1	1	1	1	1	1	1	1	-0.29%	0.73%	0.20%

Associated City	Airport Name	FAA ID	CASP 2018 Based Aircraft	Projections														
				2023			2028			2033			2038			CAGR 2018-2038		
				Population (Pop.)	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix	Pop.	National Active Fleet	Airport Fleet Mix
Walden	**Walden-Jackson County**	33V	3	3	3	3	3	3	3	3	3	3	3	3	3	-0.45%	0.73%	0.20%
Walsenburg	**Spanish Peaks Airfield**	4V1	18	18	19	19	17	19	20	17	20	21	17	21	22	-0.32%	0.73%	1.00%
Westcliffe	**Silver West**	C08	24	24	25	25	25	26	25	25	27	26	25	28	27	0.27%	0.73%	0.50%
Wray	**Wray Municipal**	2V5	14	14	15	14	14	15	14	15	16	14	15	16	15	0.32%	0.73%	0.20%
Yuma	**Yuma Municipal**	2V6	12	12	13	12	12	13	12	13	13	12	13	14	12	0.32%	0.73%	0.20%
Commercial Service Airports Total			**1,183**	**1,267**	**1,233**	**1,243**	**1,356**	**1,275**	**1,307**	**1,453**	**1,318**	**1,373**	**1,557**	**1,369**	**1,443**	**1.39%**	**0.73%**	**1.00%**
General Aviation Airports Total			**3,450**	**3,665**	**3,597**	**3,566**	**3,898**	**3,717**	**3,687**	**4,151**	**3,843**	**3,814**	**4,426**	**3,993**	**3,946**	**1.25%**	**0.73%**	**0.67%**
System-wide Total			**4,633**	**4,931**	**4,830**	**4,809**	**5,254**	**4,992**	**4,994**	**5,604**	**5,161**	**5,187**	**5,983**	**5,362**	**5,389**	**1.29%**	**0.73%**	**0.76%**

Note: Totals may not add due to rounding as growth rates are applied to whole numbers.

Sources: Woods and Poole Economics, Inc., 2018; FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2019

7.6. Operations Forecast

This section analyzes the different categories of operations occurring and projected to occur system-wide. Forecasting projected annual operations assists in planning for and implementing facility improvements to support the different types of operations predicted to occur. Annual operations were broken down into separate categories and individually forecasted for analysis:

- General Aviation (GA)
- Military
- Commercial service

Annual operations in this section were compiled from different sources to verify outlier data against multiple reports. Operations for each airport were obtained from the following sources:

- FAA 5010-1 Master Record
- FAA TAF (pulled March 2019)
- 2018 Inventory & Data Form

After reviewing the data from the three sources and coordinating with FAA and CDOT Division of Aeronautics, it was determined that different sources would be used for NPIAS and non-NPIAS airports to determine the 2018 operations baseline for the CASP as follows:

NPIAS Airports

- FAA TAF operations were used for these airports.

Non-NPIAS Airports:

- Airport-reported responses to the 2018 Inventory & Data Form operations were used for these airports.

These data make up the CASP baseline data for 2018 for use in developing future operational activity projections. CASP baseline 2018 operations are rounded to the nearest ten in the following sections.

7.6.1. General Aviation Operations Forecast

GA operations are all operations that are not conducted by commercial service or military aircraft. GA operations do occur at commercial service airports and can take the form of services such as aerial application, flight training, emergency response, aerial firefighting, business or corporate flights, and personal recreational flying.

Three of Colorado's GA airports have air traffic control towers (ATCT) which record takeoffs and landings (total operations): Centennial Airport (APA), Rocky Mountain Metropolitan (BJC), and Colorado Air and Space Port (CFO). The remaining GA airports' annual operations do not have a formal system of recording their operations and may use different tactics to make these determinations such as, but not limited to: querying major operators or flight schools, completing estimates based on local knowledge, or determining the operations based on an average number of operations per based aircraft.

To note, operations data shown for commercial service airports in this section represent only GA operations and not commercial or military operations. For information regarding current and forecasted estimates for commercial service operations, please refer to section **7.6.3 Commercial Operations**.

Table 7.24 displays the CASP's 2018 baseline for GA operations, the preferred source of the baseline numbers was derived for each airport, and the breakdown of total GA operations into local and itinerant GA operations. According to the FAA, local operations are "airport operations performed by an aircraft that remain in the local traffic pattern… and operations to or from the same airport within a designated practice area within a 20-mile radius of the airport" whereas itinerant operations are defined as "airport operations that land at an airport arrived from outside the airport area, or depart from an airport and leave the airport area".[7] Using the determinations previously presented, the 2018 total operations that are used as the baseline for the CASP are presented in the final column. For GA airports, APA has the highest number of annual GA operations with 335,530 GA operations in 2018. FNL leads the commercial service airports with the highest number of annual GA operations at 92,260. Unsurprisingly, GA airports contribute the largest share of total GA operations system-wide comprising over 1.22 million operations compared to commercial service airports with just over 340,000 GA operations.

[7] FAA *Glossary for the 2016 Terminal Area Forecast, 2016*

Table 7.24. 2018 GA Operations by Type by Source

Associated City	Airport Name	FAA ID	Local GA Operations	Itinerant GA Operations	Total GA Operations	Preferred Source	CASP 2018 Baseline
Commercial Service							
Alamosa	San Luis Valley Regional	ALS	924	3,044	3,968	FAA TAF	3,970
Aspen	Aspen-Pitkin County	ASE	4,662	16,022	20,684	FAA TAF	20,680
Colorado Springs	Colorado Springs Municipal	COS	35,406	32,804	68,210	FAA TAF	68,210
Cortez	Cortez Municipal	CEZ	3,000	5,500	8,500	FAA TAF	8,500
Denver	Denver International	DEN	0	4,150	4,150	FAA TAF	4,150
Durango	Durango-La Plata County	DRO	10,372	10,371	20,743	FAA TAF	20,740
Eagle	Eagle County Regional	EGE	5,802	17,800	23,602	FAA TAF	23,600
Fort Collins/ Loveland	Northern Colorado Regional	FNL	35,404	56,856	92,260	FAA TAF	92,260
Grand Junction	Grand Junction Regional	GJT	8,848	20,992	29,840	FAA TAF	29,840
Gunnison	Gunnison-Crested Butte Regional	GUC	734	4,931	5,665	FAA TAF	5,670
Hayden	Yampa Valley	HDN	2,024	3,518	5,542	FAA TAF	5,540
Montrose	Montrose Regional	MTJ	12,000	12,683	24,683	FAA TAF	24,680
Pueblo	Pueblo Memorial	PUB	6,308	16,644	22,952	FAA TAF	22,950
Telluride	Telluride Regional	TEX	0	9,370	9,370	FAA TAF	9,370
General Aviation							
Akron	Colorado Plains Regional	AKO	8,000	11,500	19,500	FAA TAF	19,500
Blanca	Blanca	05V	770	230	1,000	2018 Inventory & Data Form	1,000
Boulder	Boulder Municipal	BDU	43,932	7,426	51,358	FAA TAF	51,360
Brush	Brush Municipal	7V5	1,170	291	1,461	2018 Inventory & Data Form	1,460
Buena Vista	Central Colorado Regional	AEJ	3,893	5,970	9,863	FAA TAF	9,860
Burlington	Kit Carson County	ITR	3,200	4,713	7,913	FAA TAF	7,910

Associated City	Airport Name	FAA ID	Local GA Operations	Itinerant GA Operations	Total GA Operations	Preferred Source	CASP 2018 Baseline
Canon City	Fremont County	1V6	4,200	8,000	12,200	FAA TAF	12,200
Center	Leach	1V8	4	4	8	2018 Inventory & Data Form	830
Colorado Springs	Meadow Lake	FLY	33,522	12,492	46,014	FAA TAF	46,010
Craig	Craig-Moffat	CAG	9,053	2,947	12,000	FAA TAF	12,000
Creede	Mineral County Memorial	C24	720	719	1,439	2018 Inventory & Data Form	1,440
Del Norte	Astronaut Kent Rominger	RCV	4,380	1,095	5,475	2018 Inventory & Data Form	5,480
Delta	Blake Field	AJZ	1,455	1,455	2,910	FAA TAF	2,910
Denver	Centennial	APA	163,658	171,875	335,533	FAA TAF	335,530
Denver	Colorado Air and Space Port	CFO	44,253	32,838	77,091	FAA TAF	77,090
Denver	Rocky Mountain Metropolitan	BJC	93,272	74,138	167,410	FAA TAF	167,410
Eads	Eads Municipal	9V7	472	240	712	2018 Inventory & Data Form	710
Erie	Erie Municipal	EIK	31,200	20,800	52,000	FAA TAF	52,000
Fort Morgan	Fort Morgan Municipal	FMM	5,000	4,800	9,800	FAA TAF	9,800
Glenwood Springs	Glenwood Springs Municipal	GWS	17,600	4,420	22,020	2018 Inventory & Data Form	22,020
Granby	Granby-Grand County	GNB	1,980	620	2,600	FAA TAF	2,600
Greeley	Greeley-Weld County	GXY	75,245	47,976	123,221	FAA TAF	123,220
Haxtun	Haxtun Municipal	17V	30	60	90	2018 Inventory & Data Form	90
Holly	Holly	K08	740	345	1,085	2018 Inventory & Data Form	1,090
Holyoke	Holyoke	HEQ	5,500	3,000	8,500	FAA TAF	8,500

Associated City	Airport Name	FAA ID	Local GA Operations	Itinerant GA Operations	Total GA Operations	Preferred Source	CASP 2018 Baseline
Julesburg	Julesburg Municipal	7V8	300	12	312	2018 Inventory & Data Form	310
Kremmling	Mc Elroy Airfield	20V	533	1,298	1,831	FAA TAF	1,830
La Junta	La Junta Municipal	LHX	5,645	3,305	8,950	FAA TAF	8,950
La Veta	Cuchara Valley	07V	12	2	14	2018 Inventory & Data Form	10
Lamar	Lamar Municipal	LAA	1,913	1,276	3,189	FAA TAF	3,190
Las Animas	Las Animas-Bent County	7V9	624	208	832	2018 Inventory & Data Form	830
Leadville	Lake County	LXV	1,800	1,200	3,000	FAA TAF	3,000
Limon	Limon Municipal	LIC	2,965	2,965	5,930	FAA TAF	5,930
Longmont	Vance Brand	LMO	50,971	21,548	72,519	FAA TAF	72,520
Meeker	Meeker/Coulter Field	EEO	2,400	5,650	8,050	FAA TAF	8,050
Monte Vista	Monte Vista Municipal	MVI	3,584	2,416	6,000	FAA TAF	6,000
Nucla	Hopkins Field	AIB	1,600	2,530	4,130	FAA TAF	4,130
Pagosa Springs	Stevens Field	PSO	6,077	10,226	16,303	FAA TAF	16,300
Paonia	North Fork Valley	7V2	2,000	0	2,000	2018 Inventory & Data Form	2,000
Rangely	Rangely	4V0	42,000	5,100	47,100	FAA TAF	47,100
Rifle	Rifle Garfield County	RIL	4,760	9,771	14,531	FAA TAF	14,530
Saguache	Saguache Municipal	04V	65	7	72	2018 Inventory & Data Form	70
Salida	Harriet Alexander Field	ANK	1,383	2,582	3,965	FAA TAF	3,970
Springfield	Springfield Municipal	8V7	4,500	75	4,575	FAA TAF	4,580
Steamboat Springs	Steamboat Springs	SBS	9,377	1,725	11,102	FAA TAF	11,100
Sterling	Sterling Municipal	STK	408	1,730	2,138	FAA TAF	2,140
Trinidad	Perry Stokes	TAD	3,080	2,200	5,280	FAA TAF	5,280

Associated City	Airport Name	FAA ID	Local GA Operations	Itinerant GA Operations	Total GA Operations	Preferred Source	CASP 2018 Baseline
Walden	Walden-Jackson County	33V	439	658	1,097	2018 Inventory & Data Form	1,100
Walsenburg	Spanish Peaks Airfield	4V1	3,500	1,500	5,000	FAA TAF	5,000
Westcliffe	Silver West	C08	600	200	800	2018 Inventory & Data Form	800
Wray	Wray Municipal	2V5	6,862	7,738	14,600	FAA TAF	14,600
Yuma	Yuma Municipal	2V6	3,500	1,500	5,000	FAA TAF	5,000
Commercial Service Airports Total			**125,484**	**214,685**	**340,169**		**340,170**
General Aviation Airports Total			**714,876**	**505,472**	**1,220,348**		**1,220,350**
System-wide Total			**840,360**	**720,157**	**1,560,517**		**1,560,520**

Sources: 2018 Inventory & Data Form; FAA TAF, pulled March 2019

Colorado is home to two large armed forces aviation training programs that are preparing the next generation of military pilots. The U.S. Air Force Academy, located in Colorado Springs, is one of four Military Academies in the U.S. and is critical to the nation's defense. The other training program is L3 Doss Aviation, located at PUB, which is a government-contracted flight school that has graduated more than 17,000 Air Force and Air Force Reserve Pilots since opening in 2006.

7.6.1.1. GA Operations Forecast Methodologies

To establish a consistent CASP baseline for GA operations some operations were recategorized to a more appropriate group. Some GA airports have limited and occasional operational activity that is classified as air carrier and/or air taxi/commuter. This service is not always traditional "commercial airline service" but is defined by FAA as "aircraft with seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less, carrying passengers or cargo for hire or compensation[8]" and classified as commercial service operations. Since this service is not regular, it was determined that for forecasting purposes at GA airports, any operations recorded as commercial service and/or air taxi/commuter would be combined with GA operations and reflected as such in the 2020 CASP.

Three different forecasting methodologies were utilized to determine the most reliable forecast estimates of GA operations for the CASP. Each methodology was applied to the 2018 GA operations CASP baseline for each airport. Explanations of methodologies used for CASP based aircraft forecasts are below:

Population Growth Rates by County

This method examines the direct relationship between operations and the population of the county that the airport resides in. Similar to previous sections, population growth rates were developed using data from Woods and Poole Economics county data and applied to the airport's 2018 FAA baseline for operations. This method assumes that the operations changes will reflect the county's population growth rate through the planning period. To note, multiple airports may operate within the same county, these airports were given the same county growth rates.

Employment Growth Rates by County

This method assumes a direct correlation exists between the airports' GA operations and the associated county's employment rates. This more closely ties changes in economic activity (employment in this case) to potential changes in total operations. Similar to prior socioeconomic forecast methodologies, county employment growth rates were developed using Woods and Poole Economics, Inc. data and applied to the airports within that county. It should be noted that multiple airports may operate within the same county; these airports were given the same county growth rates.

Airport Reference Code (ARC) Category Growth Rate

An airport's ARC is defined by the FAA as a "designation that signifies the airport's highest Runway Design Code (RDC)[9]," indicating the most demanding aircraft that may be able to operate safely on that runway and at the airport. While an airport may have a more demanding ARC and be utilized by smaller aircraft, larger aircraft typically do not use an airport with a smaller ARC such as an A-I which indicates an airport was designed to accommodate aircraft with an approach speed of less than 91 knots and with a tail height less than 20 feet and a wingspan less than 49 feet.

This forecast method utilizes each airport's ARC identified from airport-reported data and assigns a specific annual growth rate to their ARC designation. These growth rates, shown in **Table 7.25**, were

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[8] FAA *Glossary for the 2016 Terminal Area Forecast, 2016*
[9] FAA Advisory Circular (AC) 150/5300-13A, Change 1, Airport Design

developed based on the FAA's projections of hours flown by aircraft, by type. Hours flown are an indicator of activity or operations by aircraft types nationwide. Since the majority of airports nationwide do not have an ATCT, forecasts of hours flown, especially by type of aircraft, are a better indicator of potential future activity than forecasts of operations from those that have an ATCT. The range of growth rates indicates that the FAA anticipates that activity by larger, more demanding aircraft, is expected to experience the most substantial growth, compared to activity or hours flown by smaller aircraft.

Table 7.25. CAGRs Based on ARC

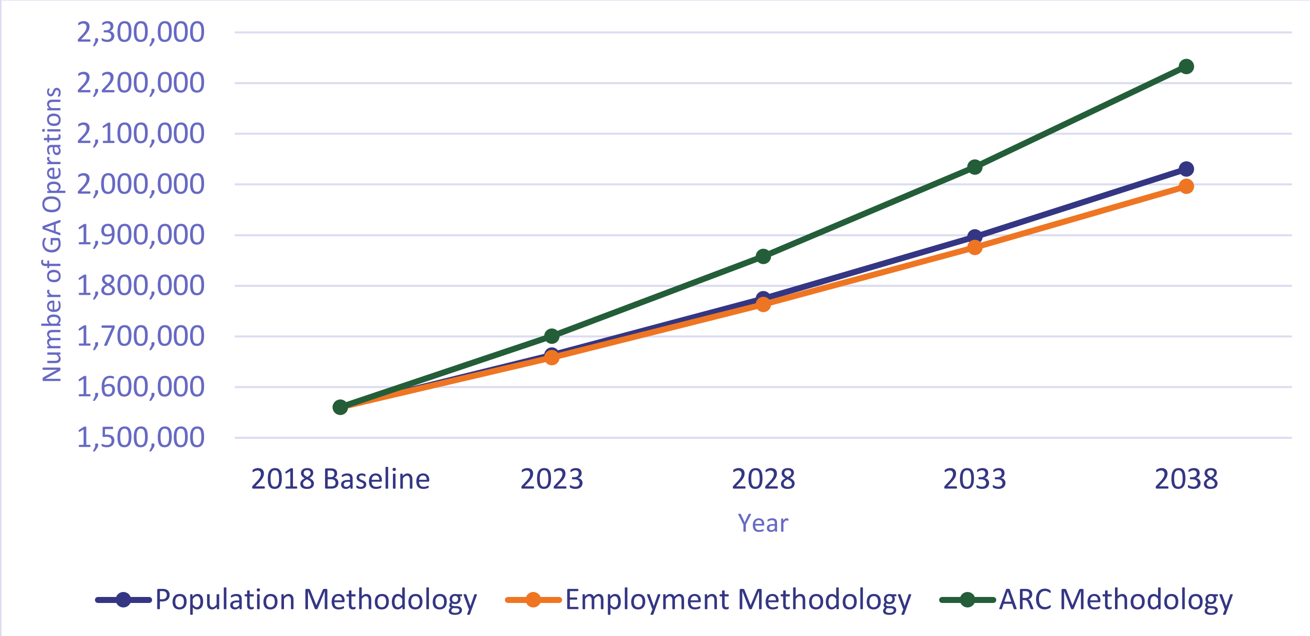
ARC	CAGR Applied to 2018 GA Ops Baseline
A-I through B-I	0.1%
B-II	0.4%
C-II	1.8%
C-III through C-IV	2.4%
D-I or Greater	2.8%

Sources: FAA Aerospace Forecasts, 2019-2039; Kimley-Horn, 2019

7.6.1.2. General Aviation Operations Forecast Results

Figure 7.19 displays the total number of GA operations forecasted in the three methodologies. All three projections of GA operations anticipate growth for the next 20 years ranging between 1.23 and 1.80 percent through 2038. This growth is anticipated to amount anywhere between 435,120 and 673,410 additional GA operations. The ARC methodology estimates the fastest growth among the three methodologies and anticipates operations to increase at a rate of 1.80 percent. The population and employment growth rate methodologies anticipate slightly slower growth to occur through the next 20 years. The ARC and population methodologies project GA operations may exceed 2 million by 2038.

Figure 7.19. GA Operations Forecasts by Methodology



Sources: FAA TAF, pulled March 2019; Kimley-Horn, 2019

Results from the three different forecasting methodologies were compared to select the preferred methodology that best represents future estimates in GA operations system-wide. The ARC growth rate was determined as the preferred methodology for GA operations projections through the planning horizon. This approach considers each airport's design and capability to serve specific types of aircraft and applies FAA growth rate predictions for aircraft by type. The ARC approach was deemed to provide a more accurate and reliable representation of GA operations for most airports.

Table 7.26 shows the application of the three methodologies applied to the 2018 baseline for GA operations developed for the CASP. ARC projections, highlighted in light blue, represent the fastest growth rate of all three methodologies and anticipate the number of system-wide GA operations to surpass the 2 million mark by 2033. Commercial service airports are forecasted to experience the fastest growth rate as the bulk of these airports represent higher ARC designations in the system. Commercial service airports are projected to grow at 2.50 percent annually, amounting to over 217,000 additional GA operations for a total of 557,590 GA operations in 2038. GA operations system-wide are estimated to gain over 672,000 more GA operations in 2038 at an annual rate of 1.80 percent. GA airports are projected to reach 1.67 million operations by 2038.

Table 7.26. GA Operations Forecasts by Methodology, 2018-2038

Associated City	Airport Name	FAA ID	CASP 2018 GA Operations Baseline	Projections														
				2023			2028			2033			2038			CAGR 2018-2038		
				Population (Pop.)	Employment (Employ.)	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC
Commercial Service																		
Alamosa	San Luis Valley Regional	ALS	3,970	4,190	4,090	4,340	4,420	4,220	4,740	4,670	4,360	5,190	4,920	4,490	5,670	1.80%	0.62%	1.09%
Aspen	Aspen-Pitkin County	ASE	20,680	21,210	21,200	27,260	21,750	21,720	27,260	22,300	22,260	31,300	22,870	22,810	35,930	2.80%	0.49%	0.50%
Colorado Springs	Colorado Springs Municipal	COS	68,210	73,270	72,500	86,470	78,700	77,060	86,470	84,530	81,900	97,350	90,800	87,050	109,610	2.40%	1.23%	1.44%
Cortez	Cortez Municipal	CEZ	8,500	9,200	8,990	8,850	9,950	9,510	8,850	10,760	10,060	9,020	11,640	10,640	9,210	0.40%	1.13%	1.59%
Denver	Denver International	DEN	4,150	4,370	4,410	5,470	4,600	4,680	5,470	4,840	4,980	6,280	5,090	5,290	7,210	2.80%	1.22%	1.03%
Durango	Durango-La Plata County	DRO	20,740	22,460	22,130	27,340	24,320	23,610	27,340	26,330	25,190	31,390	28,500	26,870	36,040	2.80%	1.30%	1.60%
Eagle	Eagle County Regional	EGE	23,600	25,500	25,360	31,110	27,560	27,260	31,110	29,770	29,300	35,710	32,170	31,480	41,000	2.80%	1.45%	1.56%
Fort Collins/ Loveland	Northern Colorado Regional	FNL	92,260	99,440	98,990	116,950	107,170	106,210	116,950	115,510	113,960	131,680	124,490	122,270	148,260	2.40%	1.42%	1.51%
Grand Junction	Grand Junction Regional	GJT	29,840	32,060	31,790	39,330	34,450	33,860	39,330	37,010	36,070	45,150	39,770	38,420	51,840	2.80%	1.27%	1.45%
Gunnison	Gunnison-Crested Butte Regional	GUC	5,670	5,900	6,000	7,180	6,150	6,350	7,180	6,410	6,730	8,090	6,680	7,120	9,100	2.40%	1.15%	0.83%
Hayden	Yampa Valley	HDN	5,540	6,060	5,800	7,030	6,630	6,070	7,030	7,250	6,360	7,910	7,920	6,660	8,910	2.40%	0.92%	1.80%
Montrose	Montrose Regional	MTJ	24,680	26,840	26,590	32,530	29,190	28,640	32,530	31,750	30,850	37,350	34,520	33,220	42,880	2.80%	1.50%	1.69%
Pueblo	Pueblo Memorial	PUB	22,950	24,150	23,970	29,100	25,410	25,020	29,100	26,730	26,130	32,760	28,120	27,280	36,880	2.40%	0.87%	1.02%
Telluride	Telluride Regional	TEX	9,370	10,430	9,990	11,880	11,620	10,640	11,880	12,940	11,340	13,370	14,410	12,080	15,060	2.40%	1.28%	2.17%

Associated City	Airport Name	FAA ID	CASP 2018 GA Operations Baseline	Projections														
				2023			2028			2033			2038			CAGR 2018-2038		
				Population (Pop.)	Employment (Employ.)	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC
General Aviation																		
Akron	Colorado Plains Regional	AKO	19,500	19,580	19,540	19,890	19,660	19,580	20,290	19,740	19,620	20,700	19,830	19,660	21,120	0.40%	0.04%	0.08%
Blanca	Blanca	05V	1,000	990	1,010	1,010	980	1,030	1,010	980	1,040	1,020	970	1,050	1,020	0.10%	0.25%	-0.16%
Boulder	Boulder Municipal	BDU	51,360	53,950	54,510	52,390	56,670	57,860	53,450	59,530	61,420	54,530	62,530	65,200	55,630	0.40%	1.20%	0.99%
Brush	Brush Municipal	7V5	1,460	1,550	1,510	1,470	1,640	1,560	1,480	1,740	1,610	1,480	1,850	1,670	1,490	0.10%	0.66%	1.18%
Buena Vista	Central Colorado Regional	AEJ	9,860	10,320	10,300	10,060	10,800	10,760	10,260	11,300	11,240	10,470	11,820	11,740	10,680	0.40%	0.87%	0.91%
Burlington	Kit Carson County	ITR	7,910	8,160	8,080	8,070	8,420	8,240	8,240	8,690	8,410	8,400	8,960	8,590	8,570	0.40%	0.41%	0.63%
Canon City	Fremont County	1V6	12,200	12,410	12,510	12,450	12,630	12,830	12,700	12,850	13,160	12,950	13,070	13,490	13,210	0.40%	0.51%	0.34%
Center	Leach	1V8	833	826	819	837	820	804	841	813	791	846	807	777	850	0.-16%	-0.35%	0.10%
Colorado Springs	Meadow Lake	FLY	46,010	49,430	48,910	46,240	53,090	51,980	46,480	57,030	55,250	46,710	61,250	58,720	46,940	0.16%	1.23%	1.44%
Craig	Craig-Moffat	CAG	12,000	12,070	12,420	12,240	12,140	12,850	12,490	12,210	13,300	12,740	12,280	13,770	13,000	0.40%	0.69%	0.12%
Creede	Mineral County Memorial	C24	1,440	1,490	1,440	1,450	1,540	1,440	1,450	1,600	1,450	1,460	1,650	1,450	1,470	0.10%	0.03%	0.69%
Del Norte	Astronaut Kent Rominger	RCV	5,470	5,470	5,410	5,590	5,470	5,350	5,700	5,460	5,280	5,810	5,460	5,220	5,930	0.40%	-0.24%	-0.02%
Delta	Blake Field	AJZ	2,910	3,040	3,080	2,970	3,170	3,250	3,030	3,310	3,440	3,090	3,460	3,640	3,150	0.40%	1.13%	0.87%
Denver	Centennial	APA	335,530	354,540	356,150	385,210	374,620	378,040	442,250	395,850	401,270	507,730	418,270	425,940	582,900	2.80%	1.20%	1.11%
Denver	Colorado Air and Space Port	CFO	77,090	84,280	81,830	84,280	92,130	86,860	92,150	100,720	92,200	100,740	110,110	97,860	110,140	1.80%	1.20%	1.80%
Denver	Rocky Mountain Metropolitan	BJC	167,410	172,090	177,340	183,030	176,910	187,860	200,110	181,860	199,010	218,780	186,950	210,820	239,190	1.80%	1.16%	0.55%
Eads	Eads Municipal	9V7	710	690	690	720	670	660	720	650	640	720	630	620	730	0.10%	-0.70%	-0.60%

Associated City	Airport Name	FAA ID	CASP 2018 GA Operations Baseline	Projections														
				2023			2028			2033			2038			CAGR 2018-2038		
				Population (Pop.)	Employment (Employ.)	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC	Pop.	Employ.	ARC
Erie	Erie Municipal	EIK	52,000	59,940	57,560	52,260	69,090	63,720	52,520	79,630	70,540	52,790	91,790	78,080	53,050	0.10%	2.05%	2.88%
Fort Morgan	Fort Morgan Municipal	FMM	9,800	10,390	10,130	10,000	11,020	10,470	10,200	11,680	10,820	10,400	12,380	11,180	10,610	0.40%	0.66%	1.18%
Glenwood Springs	Glenwood Springs Municipal	GWS	22,020	24,090	24,170	22,460	26,350	26,520	22,920	28,820	29,100	23,380	31,530	31,940	23,850	0.40%	1.88%	1.81%
Granby	Granby-Grand County	GNB	2,600	2,810	2,740	2,650	3,040	2,890	2,710	3,290	3,050	2,760	3,550	3,210	2,820	0.40%	1.07%	1.57%
Greeley	Greeley-Weld County	GXY	123,220	142,030	136,400	134,720	163,710	150,990	147,290	188,700	167,150	161,030	217,510	185,030	176,050	1.80%	2.05%	2.88%
Haxtun	Haxtun Municipal	17V	90	90	90	90	90	90	90	90	100	90	90	100	90	0.10%	0.50%	-0.05%
Holly	Holly	K08	1,090	1,080	1,090	1,090	1,070	1,090	1,100	1,060	1,090	1,100	1,060	1,090	1,110	0.10%	0.05%	-0.13%
Holyoke	Holyoke	HEQ	8,500	8,480	8,710	8,670	8,460	8,930	8,850	8,440	9,160	9,020	8,420	9,390	9,210	0.40%	0.50%	-0.05%
Julesburg	Julesburg Municipal	7V8	310	310	310	310	310	310	320	310	320	320	300	320	320	0.10%	0.08%	-0.13%
Kremmling	Mc Elroy Airfield	20V	1,830	1,980	1,930	1,870	2,140	2,040	1,910	2,310	2,150	1,940	2,500	2,260	1,980	0.40%	1.07%	1.57%
La Junta	La Junta Municipal	LHX	8,950	8,770	8,840	9,130	8,600	8,740	9,310	8,430	8,630	9,500	8,260	8,530	9,690	0.40%	-0.24%	-0.40%
La Veta	Cuchara Valley	07V	10	10	10	10	10	10	10	10	10	10	10	10	10	0.10%	-0.16%	-0.32%
Lamar	Lamar Municipal	LAA	3,190	3,170	3,200	3,250	3,150	3,200	3,320	3,130	3,210	3,390	3,110	3,220	3,450	0.40%	0.05%	-0.13%
Las Animas	Las Animas-Bent County	7V9	830	830	850	840	820	870	840	810	890	840	810	920	850	0.10%	0.48%	-0.14%
Leadville	Lake County	LXV	3,000	3,110	3,250	3,060	3,220	3,520	3,120	3,340	3,810	3,190	3,460	4,120	3,250	0.40%	1.60%	0.72%
Limon	Limon Municipal	LIC	5,930	6,300	5,990	5,960	6,690	6,050	5,990	7,110	6,110	6,020	7,550	6,170	6,050	0.10%	0.20%	1.21%
Longmont	Vance Brand	LMO	72,520	76,180	76,980	73,980	80,020	81,710	75,470	84,050	86,730	76,990	88,290	92,060	78,550	0.40%	1.20%	0.99%
Meeker	Meeker/Coulter Field	EEO	8,050	8,210	8,420	8,210	8,370	8,820	8,380	8,530	9,230	8,550	8,700	9,660	8,720	0.40%	0.91%	0.39%
Monte Vista	Monte Vista Municipal	MVI	6,000	6,000	5,930	6,030	5,990	5,860	6,060	5,990	5,790	6,090	5,980	5,720	6,120	0.10%	-0.24%	-0.02%
Nucla	Hopkins Field	AIB	4,130	4,490	4,450	4,210	4,880	4,790	4,300	5,310	5,160	4,380	5,780	5,560	4,470	0.40%	1.50%	1.69%

Associated City	Airport Name	FAA ID	CASP 2018 GA Operations Baseline	Projections 2023 Population (Pop.)	2023 Employment (Employ.)	2023 ARC	2028 Pop.	2028 Employ.	2028 ARC	2033 Pop.	2033 Employ.	2033 ARC	2038 Pop.	2038 Employ.	2038 ARC	CAGR 2018-2038 Pop.	CAGR 2018-2038 Employ.	CAGR 2018-2038 ARC
Pagosa Springs	Stevens Field	PSO	16,300	17,890	17,630	17,820	19,640	19,070	19,490	21,560	20,620	21,310	23,660	22,300	23,290	1.80%	1.58%	1.88%
Paonia	North Fork Valley	7V2	2,000	2,090	2,120	2,010	2,180	2,240	2,020	2,280	2,370	2,030	2,380	2,500	2,040	0.10%	1.13%	0.87%
Rangely	Rangely	4V0	47,100	48,020	49,290	48,050	48,960	51,590	49,020	49,910	53,990	50,010	50,890	56,500	51,010	0.40%	0.91%	0.39%
Rifle	Rifle Garfield County	RIL	14,530	15,900	15,950	16,680	17,390	17,500	19,150	19,020	19,210	21,990	20,810	21,080	25,240	2.80%	1.88%	1.81%
Saguache	Saguache Municipal	04V	70	70	70	70	70	70	70	70	70	70	70	70	70	0.70%	-0.35%	-0.16%
Salida	Harriet Alexander Field	ANK	3,970	4,150	4,140	4,040	4,340	4,330	4,130	4,540	4,520	4,210	4,750	4,720	4,290	0.40%	0.87%	0.91%
Springfield	Springfield Municipal	8V7	4,580	4,410	4,550	4,600	4,250	4,530	4,620	4,090	4,500	4,640	3,940	4,480	4,670	0.10%	-0.11%	-0.74%
Steamboat Springs	Steamboat Springs	SBS	11,100	12,140	11,620	11,330	13,270	12,170	11,550	14,520	12,740	11,790	15,870	13,340	12,020	0.40%	0.92%	1.80%
Sterling	Sterling Municipal	STK	2,140	2,240	2,180	2,180	2,340	2,220	2,230	2,450	2,260	2,270	2,560	2,310	2,320	0.40%	0.38%	0.91%
Trinidad	Perry Stokes	TAD	5,280	5,200	5,300	5,390	5,130	5,310	5,500	5,050	5,330	5,610	4,980	5,340	5,720	0.40%	0.06%	-0.29%
Walden	Walden-Jackson County	33V	1,100	1,070	1,090	1,120	1,050	1,080	1,140	1,030	1,080	1,160	1,000	1,070	1,190	0.40%	-0.12%	-0.45%
Walsenburg	Spanish Peaks Airfield	4V1	5,000	4,920	4,960	5,030	4,840	4,920	5,050	4,760	4,880	5,080	4,690	4,840	5,100	0.10%	-0.16%	-0.32%
Westcliffe	Silver West	C08	800	810	830	800	820	870	810	830	910	810	840	950	820	0.10%	0.86%	0.27%
Wray	Wray Municipal	2V5	14,600	14,840	15,060	14,890	15,080	15,530	15,190	15,330	16,020	15,500	15,580	16,520	15,810	0.40%	0.62%	0.32%
Yuma	Yuma Municipal	2V6	5,000	5,080	5,160	5,100	5,160	5,320	5,200	5,250	5,490	5,310	5,330	5,660	5,420	0.40%	0.62%	0.32%
Commercial Service Airports Total			**340,170**	**365,070**	**361,800**	**384,710**	**391,900**	**384,860**	**435,230**	**420,790**	**409,460**	**492,550**	**451,920**	**435,700**	**557,590**	**1.43%**	**1.25%**	**2.50%**
General Aviation Airports Total			**1,220,350**	**1,297,970**	**1,296,560**	**1,315,840**	**1,382,930**	**1,378,340**	**1,422,500**	**1,476,060**	**1,466,140**	**1,541,770**	**1,578,340**	**1,560,450**	**1,675,310**	**1.28%**	**1.22%**	**1.59%**
System-wide Total			**1,560,520**	**1,663,050**	**1,658,360**	**1,700,550**	**1,774,830**	**1,763,210**	**1,857,730**	**1,896,850**	**1,875,610**	**2,034,320**	**2,030,260**	**1,996,150**	**2,232,900**	**1.32%**	**1.23%**	**1.80%**

Sources: Woods and Poole Economics, Inc., 2018; FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2019

7.6.2. Military Operations Forecast

Many GA and commercial service airports facilitate operations that are performed by military aircraft. Military activity in Colorado's aviation system spans from military operations conducted at Colorado Springs Municipal Airport (COS) due to its collocation with Peterson Air Force Base to itinerant military operations executed at GA and commercial service airports.

7.6.2.1. Military Operations Forecast Results

System-wide, Colorado's airports facilitated almost 260,000 military operations in 2018 according to both data from the TAF and that airports reported. Of the 42 airports that reported military operations, 13 were commercial service airports and 29 were GA airports.

The future of military operations is oftentimes difficult to ascertain as this information is dependent on national security needs. As these needs cannot be easily predicted, forecasts for future military operations are held at a constant rate into the planning horizon. Therefore, military operations are anticipated to remain flat through 2038.

Table 7.27 shows the breakdown of projected military operation estimates for the next 20 years. Commercial service airports conduct the largest proportion of military operations in the state at 80 to 84 percent of total military operations. Of commercial service airports, PUB handled the highest number of military operations of the commercial service airports with nearly 168,000 to 169,000 military operations. The GA airport handling the largest number of military operations is Meadow Lake (FLY) with 19,800 to 22,500 operations.

Table 7.27. 2018 Military Operations by Source

Associated City	Airport Name	FAA ID	TAF Military Operations	Airport-Reported Military Operations
Alamosa	San Luis Valley Regional	ALS	750	1,476
Aspen	Aspen-Pitkin County	ASE	271	159
Colorado Springs	Colorado Springs Municipal	COS	39,898	37,073
Cortez	Cortez Municipal	CEZ	30	0
Denver	Denver International	DEN	120	121
Durango	Durango-La Plata County	DRO	515	552
Eagle	Eagle County Regional	EGE	4,271	4,962
Fort Collins/ Loveland	Northern Colorado Regional	FNL	200	200
Grand Junction	Grand Junction Regional	GJT	2,228	2,364
Gunnison	Gunnison-Crested Butte Regional	GUC	212	460
Hayden	Yampa Valley	HDN	23	17
Montrose	Montrose Regional	MTJ	1,000	2,000
Pueblo	Pueblo Memorial	PUB	168,824	167,712
Telluride	Telluride Regional	TEX	0	500

Associated City	Airport Name	FAA ID	TAF Military Operations	Airport-Reported Military Operations
Akron	Colorado Plains Regional	AKO	1,000	1,000
Blanca	Blanca	05V	0	0
Boulder	Boulder Municipal	BDU	0	0
Brush	Brush Municipal	7V5	0	0
Buena Vista	Central Colorado Regional	AEJ	137	140
Burlington	Kit Carson County	ITR	87	1
Canon City	Fremont County	1V6	1,578	255
Center	Leach	1V8	0	0
Colorado Springs	Meadow Lake	FLY	19,800	22,500
Craig	Craig-Moffat	CAG	0	0
Creede	Mineral County Memorial	C24	0	0
Del Norte	Astronaut Kent Rominger	RCV	0	0
Delta	Blake Field	AJZ	0	0
Denver	Centennial	APA	5,188	5,250
Denver	Colorado Air and Space Port	CFO	2,613	3,087
Denver	Rocky Mountain Metropolitan	BJC	3,852	4,002
Eads	Eads Municipal	9V7	16	16
Erie	Erie Municipal	EIK	0	60
Fort Morgan	Fort Morgan Municipal	FMM	200	200
Glenwood Springs	Glenwood Springs Municipal	GWS	0	0
Granby	Granby-Grand County	GNB	0	20
Greeley	Greeley-Weld County	GXY	500	0
Haxtun	Haxtun Municipal	17V	0	0
Holly	Holly	K08	0	0
Holyoke	Holyoke	HEQ	0	0
Julesburg	Julesburg Municipal	7V8	0	0
Kremmling	Mc Elroy Airfield	20V	0	0
La Junta	La Junta Municipal	LHX	308	438
La Veta	Cuchara Valley	07V	36	36
Lamar	Lamar Municipal	LAA	210	100
Las Animas	Las Animas-Bent County	7V9	24	24
Leadville	Lake County	LXV	2,000	2,000
Limon	Limon Municipal	LIC	70	70
Longmont	Vance Brand	LMO	420	420
Meeker	Meeker/Coulter Field	EEO	20	10
Monte Vista	Monte Vista Municipal	MVI	0	0
Nucla	Hopkins Field	AIB	90	0
Pagosa Springs	Stevens Field	PSO	750	120

Associated City	Airport Name	FAA ID	TAF Military Operations	Airport-Reported Military Operations
Paonia	North Fork Valley	7V2	0	0
Rangely	Rangely	4V0	15	0
Rifle	Rifle Garfield County	RIL	30	6
Saguache	Saguache Municipal	04V	0	0
Salida	Harriet Alexander Field	ANK	88	400
Springfield	Springfield Municipal	8V7	0	0
Steamboat Springs	Steamboat Springs	SBS	10	82
Sterling	Sterling Municipal	STK	38	24
Trinidad	Perry Stokes	TAD	600	180
Walden	Walden-Jackson County	33V	6	6
Walsenburg	Spanish Peaks Airfield	4V1	0	14,040
Westcliffe	Silver West	C08	130	130
Wray	Wray Municipal	2V5	0	0
Yuma	Yuma Municipal	2V6	0	0
		Commercial Service Airports Total	**218,342**	**217,596**
		General Aviation Airports Total	**39,816**	**54,617**
		System-wide Total	**258,158**	**272,213**

Sources: FAA TAF, pulled March 2019, 2018 Inventory & Data Form, Kimley-Horn, 2019

7.6.3. Commercial Operations Forecast

Commercial service operations are comprised of the total number of air carrier and air taxi/commuter operations and do not include GA or military operations that take place on commercial service airports. Commercial service operations are generally reflective of enplaned passenger activity and are important to understand as they affect how the system may perform based on projected changes in demand during the planning period. These are significant to identifying future commercial service airport needs in terms of airside and landside facilities serving passengers.

The FAA defines the operations and carriers of commercial airports in the following categories:

- **Itinerant Air Carrier Operations -** Itinerant airport operations performed by aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds, carrying passengers or cargo for hire or compensation. Includes US and foreign flag carriers.
- **Itinerant Air Taxi/Commuter Operations -** Itinerant airport operations performed by aircraft with seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less, carrying passengers or cargo for hire or compensation.
- **Mainline Carriers -** Carriers providing service primarily via aircraft with 90 or more seats.
- **Regional Carriers** – Carriers providing service primarily via aircraft with 89 or less seats and whose routes serve mainly as feeders to mainline carriers.

Of note, operations data shown for commercial service airports in this section represent only combined air carrier and air taxi/commuter operations and not all types of operations that may occur.

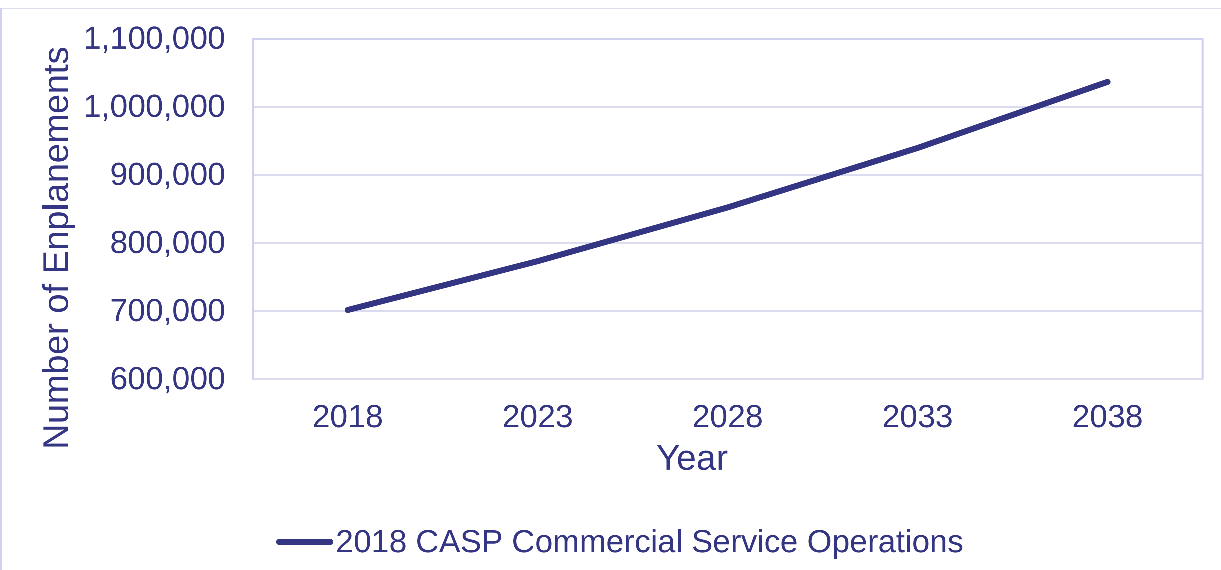
It should be noted that commercial operations forecasts at the master plan or individual airport level provide more detailed analysis of factors ranging from load factor to average seats based on aircraft fleet mix and other factors not analyzed in this statewide approach to forecasting. Therefore, the CASP commercial operations forecast is viewed as a high-level estimate since a detailed evaluation of each commercial airport's fleet and load factors was not conducted.

Growth rates from the *FAA Aerospace Forecasts 2019-2039* for aircraft operations at airports with air traffic control services, both air carrier and air taxi/commuter were reviewed. Due to FAA's forecast of declining regional aircraft overall, and especially those with 40 or less seats based on airlines' plans to up-gauge aircraft to those with larger seating capacities, different growth rates were used based on the type of service available at the airports today and the type of service that will likely be provided by 2038. Therefore, commercial service airports were assigned the following growth rates related to future commercial operations:

- Airports primarily served by small carriers with 40 seats or less: 0.0 percent CAGR was applied
- Airports served by multiple carriers, primarily regional airlines: 1.0 percent CAGR was applied
- Airports served by air carrier aircraft: 2.1 percent CAGR was applied

Figure 7.20 portrays the commercial operations forecast results using the growth rates by service type methodology.

Figure 7.20. Commercial Operations Forecast, 2018-2038



Sources: FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2019

The forecast anticipates a range from flat activity to some growth in commercial operations in the next 20 years for Colorado's airports. The flat activity is anticipated for commercial airports currently being served by very small regional carriers utilizing aircraft with lower seating capacities. It is expected that airlines will replace these with larger aircraft. This may actually result in a decline in commercial operations, however, the activity was projected to remain constant. There are other options that may be realized, however, at this time, FAA's forecasts show a decline in air taxi/commuter operations and in non-jet regional aircraft, with only a very small growth in regional jet aircraft having more than 40 seats. The CASP forecast predicts system-wide commercial operations may exceed 1 million by 2038.

Table 7.34. shows the results of the commercial operations forecast. Of the 14 commercial service airports, DEN conducts the largest number of commercial operations system-wide with nearly 600,000 commercial operations for 2018. This number is forecasted to increase to over 890,000 operations over the next 20 years. COS and DEN are anticipated to experience the fastest annual growth at 2.1 percent per year amounting to more than 15,000 and 300,000 additional commercial operations by 2038. The forecast predicts system-wide commercial operations to increase at a 1.97 CAGR and projects over 335,000 additional commercial operations.

Table 7.28. Commercial Service Operations Forecast, 2018-2038

Associated City	Airport Name	FAA ID	Historic	Projections				
			2018 CASP Commercial Operations Baseline	2023	2028	2023	2038	CAGR
Alamosa	San Luis Valley Regional	ALS	1,000	1,000	1,000	1,000	1,000	0.00%
Aspen	Aspen-Pitkin County	ASE	21,267	22,352	23,492	24,690	25,950	1.00%
Colorado Springs	Colorado Springs Municipal	COS	29,165	32,359	35,902	39,833	44,195	2.10%
Cortez	Cortez Municipal	CEZ	1,304	1,304	1,304	1,304	1,304	0.00%
Denver	Denver International*	DEN	590,252	654,887	726,599	806,164	894,442	2.10%
Durango	Durango-La Plata County	DRO	8,932	9,388	9,866	10,370	10,899	1.00%
Eagle	Eagle County Regional	EGE	12,546	13,186	13,859	14,566	15,309	1.00%
Fort Collins/ Loveland	Northern Colorado Regional	FNL	3,548	3,548	3,548	3,548	3,548	0.00%
Grand Junction	Grand Junction Regional	GJT	14,249	14,976	15,740	16,543	17,386	1.00%
Gunnison	Gunnison-Crested Butte Regional	GUC	1,052	1,106	1,162	1,221	1,284	1.00%
Hayden	Yampa Valley	HDN	8,758	9,205	9,674	10,168	10,686	1.00%
Montrose	Montrose Regional	MTJ	5,242	5,509	5,790	6,086	6,396	1.00%
Pueblo	Pueblo Memorial	PUB	4,298	4,298	4,298	4,298	4,298	0.00%
Telluride	Telluride Regional	TEX	32	32	32	32	32	0.00%
Commercial Service Airports Total			**701,645**	**773,148**	**852,267**	**939,823**	**1,036,729**	**1.97%**

**Notes: The forecasts for DEN were based on early 2018 data and an update was underway as of March 2020.*

Sources: FAA TAF, pulled March 2019; Kimley-Horn, 2019

7.6.4. Preferred Total Operations Forecast

This section summarizes the aggregate findings of the different operations categories analyzed in preceding sections for the CASP baseline forecast. The totals presented in this section combine the results of the preferred methodologies for each operations category (GA, military, and commercial) to develop the total operations forecast through 2038 for all airports in the CASP. **Table 7.29** demonstrates the total operations forecast.

Table 7.29. Preferred Total Operations Forecast, 2018-2038

Associated City	Airport Name	FAA ID	Historic	Preferred Total Operations Projections				CAGR
			CASP 2018 Total Operations Baseline	2023	2028	2033	2038	2018-2038
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	5,718	6,088	6,493	6,935	7,419	0.99%
Aspen	Aspen-Pitkin County	ASE	42,222	46,369	51,025	56,260	62,154	1.48%
Colorado Springs	Colorado Springs Municipal	COS	137,273	149,054	162,267	177,084	193,703	1.32%
Cortez	Cortez Municipal	CEZ	9,834	10,005	10,180	10,359	10,540	0.26%
Denver	Denver International	DEN	594,522	659,771	732,189	812,564	901,772	1.57%
Durango	Durango-La Plata County	DRO	30,190	33,717	37,722	42,273	47,450	1.72%
Eagle	Eagle County Regional	EGE	40,419	44,554	49,238	54,551	60,582	1.55%
Fort Collins/Loveland	Northern Colorado Regional	FNL	96,008	107,624	120,701	135,426	152,004	1.74%
Grand Junction	Grand Junction Regional	GJT	46,317	51,462	57,298	63,925	71,454	1.65%
Gunnison	Gunnison-Crested Butte Regional	GUC	6,929	7,696	8,555	9,519	10,599	1.61%
Hayden	Yampa Valley	HDN	14,323	15,467	16,723	18,101	19,615	1.19%
Montrose	Montrose Regional	MTJ	30,925	34,847	39,324	44,436	50,277	1.85%
Pueblo	Pueblo Memorial	PUB	196,074	198,964	202,217	205,880	210,004	0.27%
Telluride	Telluride Regional	TEX	9,402	10,582	11,910	13,405	15,089	1.79%
General Aviation								
Akron	Colorado Plains Regional	AKO	20,500	20,893	21,294	21,703	22,121	0.29%
Blanca	Blanca	05V	1,000	1,005	1,010	1,015	1,020	0.07%
Boulder	Boulder Municipal	BDU	51,358	52,393	53,450	54,527	55,627	0.30%
Brush	Brush Municipal	7V5	1,461	1,468	1,476	1,483	1,490	0.07%
Buena Vista	Central Colorado Regional	AEJ	10,000	10,199	10,402	10,609	10,820	0.30%
Burlington	Kit Carson County	ITR	8,000	8,160	8,322	8,488	8,658	0.30%
Canon City	Fremont County	1V6	13,778	14,024	14,275	14,531	14,792	0.27%
Center	Leach	1V8	833	837	841	846	850	0.07%
Colorado Springs	Meadow Lake	FLY	65,814	66,045	66,276	66,509	66,743	0.05%
Craig	Craig-Moffat	CAG	12,000	12,242	12,489	12,741	12,997	0.30%
Creede	Mineral County Memorial	C24	1,439	1,446	1,453	1,461	1,468	0.07%
Del Norte	Astronaut Kent Rominger	RCV	5,475	5,585	5,698	5,813	5,930	0.30%
Delta	Blake Field	AJZ	2,910	2,969	3,029	3,090	3,152	0.30%
Denver	Centennial	APA	340,721	390,401	447,437	512,917	588,093	2.07%
Denver	Colorado Air and Space Port	CFO	79,704	86,897	94,760	103,357	112,757	1.31%
Denver	Rocky Mountain Metropolitan	BJC	171,262	186,881	203,958	222,627	243,039	1.32%
Eads	Eads Municipal	9V7	728	732	735	739	742	0.07%
Erie	Erie Municipal	EIK	52,000	52,261	52,522	52,785	53,050	0.07%
Fort Morgan	Fort Morgan Municipal	FMM	10,000	10,198	10,399	10,605	10,815	0.29%

Associated City	Airport Name	FAA ID	Historic	Preferred Total Operations Projections				CAGR
			CASP 2018 Total Operations Baseline	2023	2028	2033	2038	2018-2038
Glenwood Springs	Glenwood Springs Municipal	GWS	22,020	22,464	22,917	23,379	23,850	0.30%
Granby	Granby-Grand County	GNB	2,600	2,652	2,706	2,760	2,816	0.30%
Greeley	Greeley-Weld County	GXY	123,721	135,217	147,786	161,528	176,552	1.34%
Haxtun	Haxtun Municipal	17V	90	90	91	91	92	0.07%
Holly	Holly	K08	1,085	1,090	1,096	1,101	1,107	0.07%
Holyoke	Holyoke	HEQ	8,500	8,671	8,846	9,025	9,206	0.30%
Julesburg	Julesburg Municipal	7V8	312	314	315	317	318	0.07%
Kremmling	Mc Elroy Airfield	20V	1,831	1,868	1,906	1,944	1,983	0.30%
La Junta	La Junta Municipal	LHX	9,258	9,438	9,623	9,810	10,002	0.29%
La Veta	Cuchara Valley	07V	50	50	50	50	50	0.02%
Lamar	Lamar Municipal	LAA	3,399	3,463	3,529	3,596	3,664	0.28%
Las Animas	Las Animas-Bent County	7V9	856	860	864	869	873	0.07%
Leadville	Lake County	LXV	5,000	5,060	5,122	5,185	5,249	0.18%
Limon	Limon Municipal	LIC	6,000	6,030	6,060	6,090	6,120	0.07%
Longmont	Vance Brand	LMO	72,939	74,401	75,893	77,414	78,966	0.30%
Meeker	Meeker/Coulter Field	EEO	8,070	8,232	8,398	8,567	8,739	0.30%
Monte Vista	Monte Vista Municipal	MVI	6,000	6,030	6,060	6,091	6,121	0.07%
Nucla	Hopkins Field	AIB	4,220	4,303	4,388	4,475	4,563	0.29%
Pagosa Springs	Stevens Field	PSO	17,053	18,574	20,237	22,055	24,043	1.30%
Paonia	North Fork Valley	7V2	2,000	2,010	2,020	2,030	2,040	0.07%
Rangely	Rangely	4V0	47,115	48,065	49,033	50,022	51,030	0.30%
Rifle	Rifle Garfield County	RIL	14,561	16,712	19,183	22,018	25,274	2.09%
Saguache	Saguache Municipal	04V	72	72	73	73	73	0.07%
Salida	Harriet Alexander Field	ANK	4,053	4,133	4,214	4,298	4,383	0.29%
Springfield	Springfield Municipal	8V7	4,575	4,598	4,621	4,644	4,667	0.07%
Steamboat Springs	Steamboat Springs	SBS	11,112	11,336	11,564	11,797	12,035	0.30%
Sterling	Sterling Municipal	STK	2,176	2,219	2,263	2,308	2,354	0.29%
Trinidad	Perry Stokes	TAD	5,880	5,986	6,095	6,206	6,319	0.27%
Walden	Walden-Jackson County	33V	1,103	1,125	1,148	1,171	1,194	0.30%
Walsenburg	Spanish Peaks Airfield	4V1	5,000	5,025	5,050	5,076	5,101	0.07%
Westcliffe	Silver West	C08	930	934	938	942	946	0.06%
Wray	Wray Municipal	2V5	14,600	14,894	15,195	15,501	15,813	0.30%
Yuma	Yuma Municipal	2V6	5,000	5,101	5,204	5,309	5,416	0.30%
Commercial Service Airports Total			**1,260,156**	**1,376,200**	**1,505,843**	**1,650,718**	**1,812,662**	**1.39%**
General Aviation Airports Total			**1,260,164**	**1,355,656**	**1,462,312**	**1,581,585**	**1,715,123**	**1.18%**
System-wide Total			**2,520,320**	**2,731,856**	**2,968,155**	**3,232,303**	**3,527,785**	**1.28%**

Sources: FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2019

Total operations for commercial service airports, GA airports, and system-wide are projected to increase through the 20-year planning horizon. Despite speculated constant activity in commercial operations for airports served by small air carrier aircraft, total operations at commercial service airports are anticipated to experience the fastest rates of growth at 1.39 percent annually. The number of total operations estimated to occur at commercial service airports is estimated to be above 1.81 million operations in 2038. GA airports are projected to grow at 1.18 percent annually, potentially adding over 455,000 operations through the end of the planning horizon for a total of 1,715,123 operations. System-wide, the number of operations is estimated to grow to 3.54 million in 20-years at 1.28 percent CAGR.

7.7. Summary of Forecast Findings

Accurate and reliable forecasts are essential to planning for potential facility needs, particularly in how they relate to accommodating aircraft types and future aviation activity demands. The forecasts for the CASP considered the impact of historical elements and how they set the stage for current and future demand. Colorado's socioeconomic indicators are forecasted to continue trending positively into the future. Most aviation demand forecasts in the CASP anticipate growth through 2038 in all sectors: enplanements, based aircraft, and operations. Although the predictions made in this chapter are considered optimal and unconstrained, projected demand is supported by a healthy economy, growing population, and increased investment in the aviation industry.

Preferred forecast projections are required to be compared to the FAA TAF forecasts and are subject to the FAA's approval for NPIAS airports. To provide an accurate comparison between the TAF and the 2020 CASP, only NPIAS airports are showcased in the following analyses.

CASP baseline data were coordinated with the FAA and CDOT Division of Aeronautics to provide the most accurate and reliable baseline of information that is representative of Colorado's system-wide aviation activity. Due to differences between the sources used to convey this activity, the CASP baseline data for 2018 and resulting forecasts from each preferred methodology in the CASP differs from numbers and projections found in the FAA TAF. Moderate differences in near-term forecasts are further amplified as the planning horizon continues out into the future resulting in wider discrepancies. For forecasts to be deemed consistent with the TAF, the numbers must differ by less than 10 percent in the five-year forecast period and less than 15 percent in the 10-year forecast period. Forecast numbers exceeding the 10 and 15 percent thresholds must be settled before the forecast can be used for purposes related to: environmental and noise compatibility planning, development of airport layout plans, completion of a cost-benefit analysis, and for use to justify financial decisions including the issuance of a "letter of intent" for funding opportunities[10].

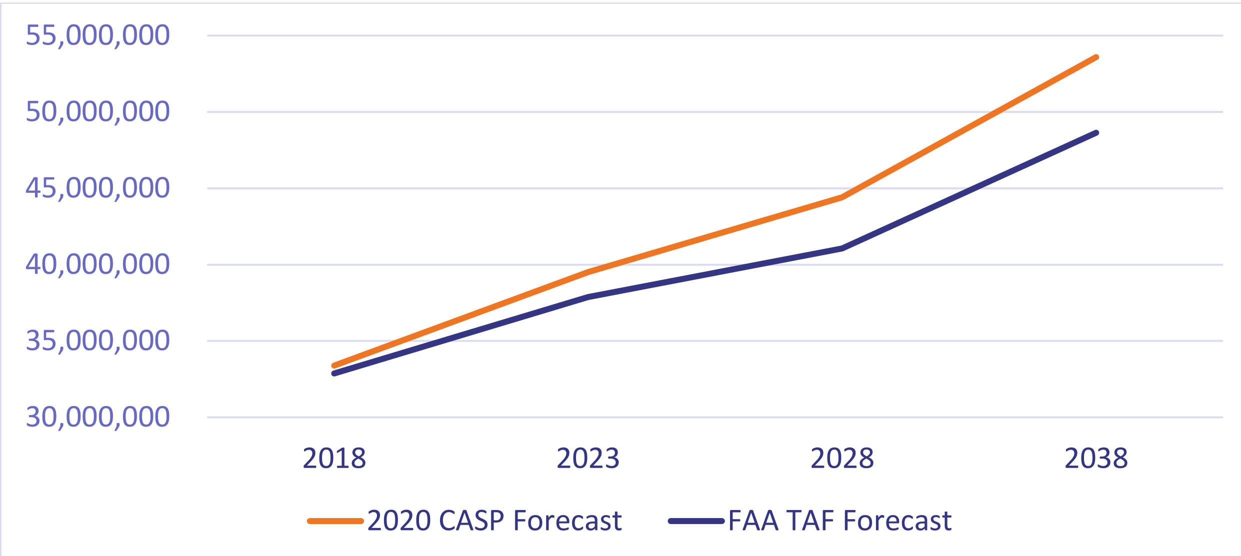
7.7.1. Enplanements Forecast Comparison to TAF

Figure 7.21 compares the results of the FAA TAF and the CASP enplanements forecasts through the 20-year planning horizon. The 2020 CASP forecasts for enplanements are anticipated to grow at 2.39 percent annually over the next 20 years. The number of enplanements is projected to reach over 53.5

[10] "Review and Approval of Aviation Forecasts," Federal Aviation Administration, June 2008

million by 2038. The TAF is predicting a slower rate of growth at 1.98 percent annually and predicts the total enplanements in 2038 could exceed 48.6 million.

Figure 7.21. Enplanements Forecast Comparison to TAF, 2018-2038



Sources: FAA TAF, pulled January and March 2019; FAA ACAIS, pulled July 2019, Kimley-Horn, 2019; "Northern Colorado Regional Airport Master Plan," 2018

Table 7.30 demonstrates the comparison between FAA TAF and the CASP baseline data and future projections for enplanements. Figures that differ more than 10 percent within the first 5 years of the projections and more than 15 percent within the first 10 years are bolded. As shown, 43 percent of commercial service airports differ more than 10 percent within the first five years. This percentage remains the same at the 10-year mark. Through the planning period the percentage of airports that differ more than 15 percent is anticipated to be 64 percent in 2038. The total number of system-wide enplanements, however, only differ by 10 percent from the TAF in 2038 and do not exceed any of the thresholds.

Table 7.30. Enplanements Forecast Comparison to TAF, 2018-2038

Airport Information			2018			2023			2028			2038		
Associated City	Airport Name	FAA ID	TAF	CASP Baseline		TAF	CASP Forecast		TAF	CASP Forecast		TAF	CASP Forecast	
				#	Difference (%)		#	Difference (%)		#	Difference (%)		#	Difference (%)
Alamosa	San Luis Valley Regional	ALS	6,800	7,030	3%	6,800	7,500	10%	6,800	8,000	**18%**	6,800	9,110	**34%**
Aspen	Aspen-Pitkin County	ASE	272,460	287,900	6%	282,050	313,220	**11%**	293,410	340,770	**16%**	320,980	403,340	**26%**
Colorado Springs	Colorado Springs Municipal	COS	873,610	846,080	-3%	837,450	925,010	10%	894,490	1,011,320	13%	1,031,670	1,208,830	**17%**
Cortez	Cortez Municipal	CEZ	7,400	7,720	4%	7,400	8,360	**13%**	7,400	9,050	**22%**	7,400	10,610	**43%**
Denver	Denver International	DEN	30,849,870	31,363,570	2%	35,779,980	37,250,090	4%	38,836,230	41,939,870	8%	46,089,260	50,625,210	10%
Durango	Durango-La Plata County	DRO	188,610	189,230	0%	208,890	205,870	-1%	222,830	223,970	1%	258,030	265,090	3%
Eagle	Eagle County Regional	EGE	170,870	175,950	3%	172,240	191,040	**11%**	178,770	207,420	16%	194,490	244,520	**26%**
***Fort Collins/ Loveland**	Northern Colorado Regional	FNL	3,390	3,390	0%	3,890	48,430	**1146%**	4,590	56,830	**1138%**	6,420	78,250	**1118%**
Grand Junction	Grand Junction Regional	GJT	219,560	222,230	1%	246,700	241,780	-2%	263,080	263,040	0%	304,510	311,340	2%
Gunnison	Gunnison-Crested Butte Regional	GUC	36,830	36,480	-1%	39,990	39,690	-1%	43,430	43,180	-1%	51,220	51,100	0%
Hayden	Yampa Valley	HDN	100,260	100,550	0%	110,530	115,520	5%	119,990	132,710	11%	142,920	175,160	**23%**
Montrose	Montrose Regional	MTJ	132,070	134,240	2%	159,500	146,050	-8%	173,930	158,890	-9%	211,720	188,060	-11%
Pueblo	Pueblo Memorial	PUB	8,970	10,450	**16%**	9,470	11,310	**19%**	10,040	12,250	**22%**	11,290	14,360	**27%**
Telluride	Telluride Regional	TEX	1,050	1,060	1%	1,050	1,730	**65%**	1,050	2,810	**168%**	1,050	7,470	**611%**
	Commercial Service Airports Total		**32,871,750**	**33,385,880**	**2%**	**37,865,940**	**39,505,600**	**4%**	**41,056,040**	**44,410,110**	**8%**	**48,637,760**	**53,592,450**	**10%**

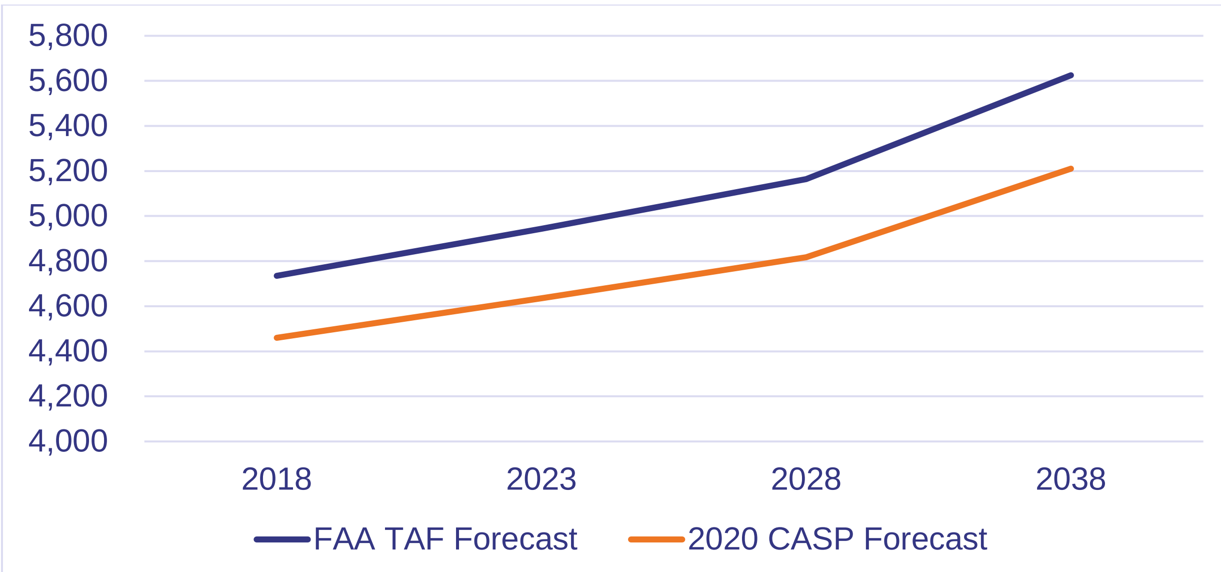
**Note: According to FNL's FAA-approved forecasts for their 2018 master plan, the preferred forecast scenario is based upon a letter of intent by Allegiant Air to return service to FNL and provide service to two destinations.*

Sources: FAA TAF, pulled January and March 2019; FAA ACAIS, pulled July 2019, Kimley-Horn, 2019; "Northern Colorado Regional Airport Master Plan," 2018

7.7.2. Based Aircraft Forecast Comparison to TAF

Figure 7.22 displays the comparison between TAF and CASP based aircraft forecasts through the 20-year planning horizon. Both forecasts predict system-wide based aircraft at NPIAS airports to increase through 2038. The TAF anticipates based aircraft to increase at a slightly faster rate at 0.86 percent CAGR than the 0.78 percent CAGR the CASP forecast predicts. The TAF projects this increase would amount to almost 900 based aircraft added to the system-wide inventory by 2038 compared to the 750 based aircraft predicted by the CASP.

Figure 7.22. Based Aircraft Forecasts Comparison to TAF, 2018-2038



Sources: FAA TAF, pulled 2019; Kimley-Horn, 2019

Table 7.31 demonstrates the differences between FAA TAF and the CASP baseline data for 2018 and forecast projections for based aircraft at NPIAS airports. Figures that differ more than 10 percent within the first 5 years of the projections and more than 15 percent within the first 10 years are **bolded**. Of the 49 NPIAS airports, 57 percent of these airports differ by more than 10 percent from the FAA TAF estimates within the first 5-years of projections. This percentage drops to 53 percent of airports as the estimates progress towards the 15 percent at 10-year threshold in 2028. In 2038, the end of the planning horizon, the percent of airports that differ by more than 15 percent from FAA TAF estimates rise slightly to 55 percent. The total number of based aircraft system-wide does not differ by more than 7 percent through 2038 and remain close to FAA TAF projections.

Table 7.31. Based Aircraft Forecast Comparison to TAF, 2018-2038

Airport Information			2018			2023			2028			2038		
Associated City	Airport Name	FAA ID	FAA TAF 2018 Based Aircraft	CASP Baseline #	CASP Baseline Difference (%)	TAF	CASP Forecast #	CASP Forecast Difference (%)	TAF	CASP Forecast #	CASP Forecast Difference (%)	TAF	CASP Forecast #	CASP Forecast Difference (%)
Commercial Service														
Alamosa	San Luis Valley Regional	ALS	39	38	-3%	41	40	-3%	43	42	-2%	48	46	-3%
Aspen	Aspen-Pitkin County	ASE	105	89	-15%	111	94	-16%	116	98	-15%	126	109	-14%
Colorado Springs	Colorado Springs Municipal	COS	247	231	-6%	272	243	-11%	297	255	-14%	347	282	-19%
Cortez	Cortez Municipal	CEZ	36	31	-14%	36	33	-9%	36	34	-5%	36	38	5%
Denver	Denver International	DEN	2	2	0%	2	2	0%	2	2	0%	2	2	0%
Durango	Durango-La Plata County	DRO	70	63	-10%	74	66	-11%	79	70	-12%	89	77	-14%
Eagle	Eagle County Regional	EGE	93	91	-2%	109	96	-12%	126	101	-20%	159	111	-30%
Fort Collins/Loveland	Northern Colorado Regional	FNL	255	255	0%	265	268	1%	272	282	4%	282	311	10%
Grand Junction	Grand Junction Regional	GJT	114	126	11%	119	132	11%	124	139	12%	134	154	15%
Gunnison	Gunnison-Crested Butte Regional	GUC	25	31	24%	30	33	9%	35	34	-2%	45	38	-16%
Hayden	Yampa Valley	HDN	7	12	71%	7	13	80%	7	13	89%	7	15	109%
Montrose	Montrose Regional	MTJ	78	81	4%	79	85	8%	79	89	13%	79	99	25%
Pueblo	Pueblo Memorial	PUB	136	129	-5%	154	136	-12%	173	142	-18%	213	157	-26%
Telluride	Telluride Regional	TEX	35	44	26%	35	46	32%	35	49	39%	35	54	53%
General Aviation														
Akron	Colorado Plains Regional	AKO	8	7	-13%	8	7	-12%	8	7	-11%	8	7	-9%
Boulder	Boulder Municipal	BDU	117	48	-59%	122	49	-60%	131	50	-61%	151	53	-65%
Buena Vista	Central Colorado Regional	AEJ	13	2	-85%	15	2	-87%	20	2	-90%	30	2	-93%
Burlington	Kit Carson County	ITR	19	20	5%	19	20	6%	19	20	7%	19	21	10%
Canon City	Fremont County	1V6	93	76	-18%	108	78	-28%	123	80	-35%	167	84	-50%
Colorado Springs	Meadow Lake	FLY	420	403	-4%	420	407	-3%	420	411	-2%	420	419	0%
Craig	Craig-Moffat	CAG	24	20	-17%	24	20	-16%	24	20	-15%	24	21	-13%
Delta	Blake Field	AJZ	42	46	10%	43	46	8%	43	47	9%	43	48	11%
Denver	Centennial	APA	803	878	9%	812	923	14%	822	970	18%	842	1,071	27%
Denver	Colorado Air and Space Port	CFO	399	353	-12%	424	371	-12%	454	390	-14%	515	431	-16%
Denver	Rocky Mountain Metropolitan	BJC	432	449	4%	454	472	4%	478	496	4%	529	548	4%
Erie	Erie Municipal	EIK	175	138	-21%	175	139	-20%	175	141	-20%	175	144	-18%
Fort Morgan	Fort Morgan Municipal	FMM	33	31	-6%	33	31	-5%	33	32	-4%	33	32	-2%
Granby	Granby-Grand County	GNB	21	15	-29%	21	15	-27%	21	16	-25%	21	17	-21%
Greeley	Greeley-Weld County	GXY	202	137	-32%	211	144	-32%	220	151	-31%	238	167	-30%
Holyoke	Holyoke	HEQ	9	9	0%	9	9	1%	9	9	2%	9	9	4%
Kremmling	Mc Elroy Airfield	20V	22	15	-32%	22	15	-31%	22	15	-30%	22	16	-29%
La Junta	La Junta Municipal	LHX	13	10	-23%	13	10	-22%	13	10	-22%	13	10	-20%

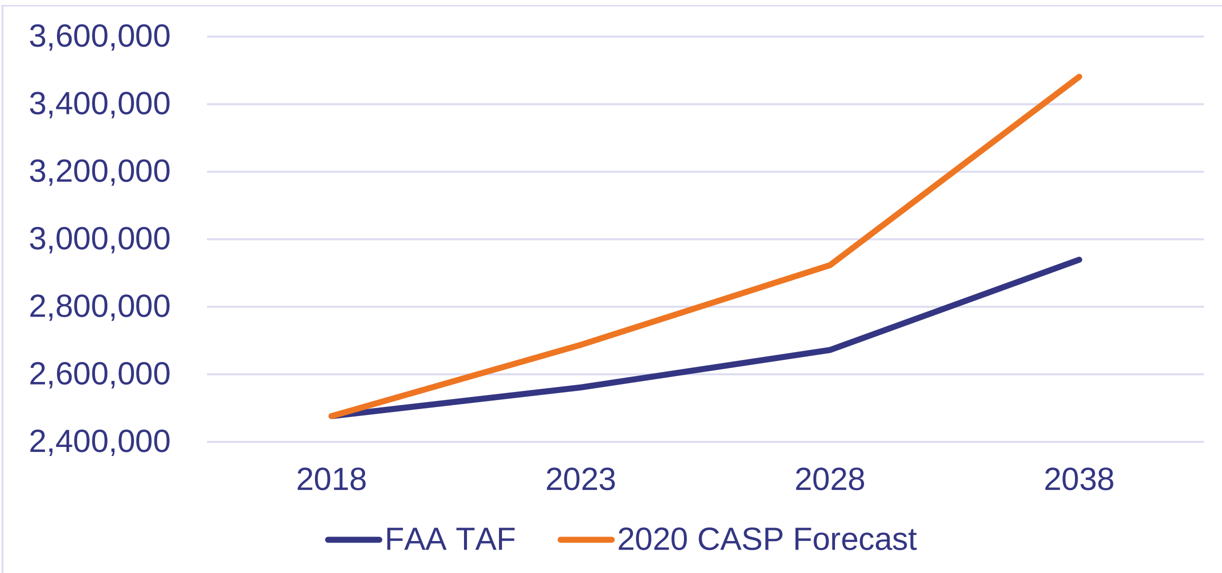
Airport Information				2018		2023			2028			2038		
Associated City	Airport Name	FAA ID	FAA TAF 2018 Based Aircraft	CASP Baseline		TAF	CASP Forecast		TAF	CASP Forecast		TAF	CASP Forecast	
				#	Difference (%)		#	Difference (%)		#	Difference (%)		#	Difference (%)
Lamar	Lamar Municipal	LAA	22	27	**23%**	25	27	9%	30	28	-8%	40	28	**-30%**
Leadville	Lake County	LXV	5	5	0%	5	5	1%	5	5	2%	5	5	4%
Limon	Limon Municipal	LIC	23	20	**-13%**	23	20	**-12%**	23	20	-11%	23	21	-9%
Longmont	Vance Brand	LMO	300	274	-9%	300	277	-8%	300	280	-7%	300	285	-5%
Meeker	Meeker/Coulter Field	EEO	11	10	-9%	11	10	-8%	11	10	-7%	11	10	-5%
Monte Vista	Monte Vista Municipal	MVI	15	15	0%	15	15	1%	15	15	2%	15	16	4%
Nucla	Hopkins Field	AIB	10	10	0%	11	10	-8%	12	10	**-15%**	12	10	-13%
Pagosa Springs	Stevens Field	PSO	32	40	**25%**	35	40	**15%**	35	41	**17%**	35	42	**19%**
Rangely	Rangely	4V0	16	13	**-19%**	16	13	**-18%**	16	13	**-17%**	16	14	**-15%**
Rifle	Rifle Garfield County	RIL	50	17	**-66%**	57	18	**-69%**	62	19	**-70%**	72	21	**-71%**
Salida	Harriet Alexander Field	ANK	27	15	**-44%**	27	16	**-42%**	27	17	**-39%**	27	18	**-32%**
Steamboat Springs	Steamboat Springs	SBS	53	59	**11%**	63	60	-4%	73	62	**-15%**	93	65	**-30%**
Sterling	Sterling Municipal	STK	34	30	**-12%**	36	31	**-15%**	38	32	**-17%**	47	33	**-29%**
Trinidad	Perry Stokes	TAD	11	1	**-91%**	12	1	**-92%**	12	1	**-91%**	12	1	-91%
Walsenburg	Spanish Peaks Airfield	4V1	10	18	**80%**	10	19	**89%**	10	20	**99%**	10	22	**120%**
Wray	Wray Municipal	2V5	16	14	**-13%**	18	14	**-21%**	23	14	**-38%**	33	15	**-56%**
Yuma	Yuma Municipal	2V6	13	12	-8%	13	12	-7%	13		12	13	12	-4%
Commercial Service Airports Total			**1,242**	**1,223**	**-2%**	**1,334**	**1,285**	**-4%**	**1,424**	**1,351**	**-5%**	**1,602**	**1,492**	**-7%**
General Aviation Airports Total			**3,493**	**3,237**	**-7%**	**3,610**	**3,349**	**-7%**	**3,740**	**3,467**	**-7%**	**4,023**	**3,719**	**-8%**
System-wide Total			**4,735**	**4,460**	**-6%**	**4,944**	**4,635**	**-6%**	**5,164**	**4,818**	**-7%**	**5,625**	**5,210**	**-7%**

Sources: FAA TAF, 2019; 2018 Inventory & Data Form; Kimley-Horn, 2019

7.7.3. Operations Forecast Comparison to TAF

Figure 7.23 demonstrates the comparison across years between the FAA TAF and the 2020 CASP total operations forecasts for NPIAS airports. Both forecasts for total operations project steady growth for the next 20 years with the 2020 CASP forecast projecting faster growth over the next 20 years. System-wide operations at NPIAS airports are estimated to reach nearly 3 million operations by 2038 according to TAF projections and surpass 3.4 million per the CASP forecasts.

Figure 7.23. Operations Forecasts Comparison to TAF, 2018-2038



Sources: FAA TAF, pulled March 2019; Kimley-Horn, 2019

Table 7.32 displays the differences between the FAA TAF and the CASP baseline data and projections for total operations. Figures that differ more than 10 percent within the first five years of the projections and more than 15 percent within the first 10 years are **bolded.** Of the NPIAS airports in the CASP, 14 percent of these differ by more than 10 percent in the first five years. This number increases slightly to 18 percent differing by more than 15 percent at 10 years. Finally, by 2038, 45 percent of NPIAS airport forecasts may differ by more than 15 percent than TAF predictions.

Table 7.32. FAA Operations Forecast Comparison to TAF, 2018-2038

Airport Information			2018			2023			2028			2038		
Associated City	Airport Name	FAA ID	FAA TAF	CASP Baseline		FAA TAF	CASP Forecast		FAA TAF	CASP Forecast		FAA TAF	CASP Forecast	
				Total (#)	Difference (%)		Total (#)	Difference (%)		Total (#)	Difference (%)		Total (#)	Difference (%)
Commercial Service														
Alamosa	San Luis Valley Regional	ALS	5,718	5,718	0%	5,969	6,088	2%	6,238	6,493	4%	6,846	7,419	8%
Aspen	Aspen-Pitkin County	ASE	42,222	42,222	0%	44,201	46,369	5%	45,787	51,025	11%	49,307	62,154	**26%**
Colorado Springs	Colorado Springs Municipal	COS	137,273	137,273	0%	133,557	149,054	**12%**	135,579	162,267	**20%**	141,263	193,703	**37%**
Cortez	Cortez Municipal	CEZ	9,834	9,834	0%	9,834	10,005	2%	9,834	10,180	4%	9,834	10,540	7%
Denver	Denver International	DEN	594,522	594,522	0%	614,032	659,771	7%	658,098	732,189	11%	773,855	901,772	**17%**
Durango	Durango-La Plata County	DRO	30,190	30,190	0%	30,649	33,717	10%	31,874	37,722	**18%**	34,918	47,450	**36%**
Eagle	Eagle County Regional	EGE	40,419	40,419	0%	42,903	44,554	4%	43,872	49,238	12%	45,973	60,582	**32%**
Fort Collins/Loveland	Northern Colorado Regional	FNL	96,008	96,008	0%	101,572	107,624	6%	107,917	120,701	12%	122,013	152,004	**25%**
Grand Junction	Grand Junction Regional	GJT	46,317	46,317	0%	46,577	51,462	10%	47,482	57,298	**21%**	50,004	71,454	**43%**
Gunnison	Gunnison-Crested Butte Regional	GUC	6,929	6,929	0%	7,407	7,696	4%	7,917	8,555	8%	9,072	10,599	**17%**
Hayden	Yampa Valley	HDN	14,323	14,323	0%	13,884	15,467	**11%**	14,773	16,723	13%	16,920	19,615	**16%**
Montrose	Montrose Regional	MTJ	30,925	30,925	0%	31,523	34,847	**11%**	32,891	39,324	**20%**	36,353	50,277	**38%**
Pueblo	Pueblo Memorial	PUB	196,074	196,074	0%	197,387	198,964	1%	198,759	202,217	2%	201,708	210,004	4%
Telluride	Telluride Regional	TEX	9,402	9,402	0%	9,402	10,582	**13%**	9,402	11,910	**27%**	9,402	15,089	**60%**
General Aviation														
Akron	Colorado Plains Regional	AKO	205,00	20,500	0%	20,500	20,893	2%	20,500	21,294	4%	20,500	22,121	8%
Boulder	Boulder Municipal	BDU	51,358	51,358	0%	55,239	52,393	-5%	59,660	53,450	-10%	69,642	55,627	**-20%**
Buena Vista	Central Colorado Regional	AEJ	10,000	10,000	0%	10,000	10,199	2%	10,000	10,402	4%	10,000	10,820	8%
Burlington	Kit Carson County	ITR	8,000	8,000	0%	8,000	8,160	2%	8,000	8,322	4%	8,000	8,658	8%
Canon City	Fremont County	1V6	13,778	13,778	0%	13,778	14,024	2%	13,778	14,275	4%	13,778	14,792	7%
Colorado Springs	Meadow Lake	FLY	65,814	65,814	0%	70,121	66,045	-6%	74,852	66,276	-11%	85,750	66,743	**-22%**
Craig	Craig-Moffat	CAG	12,000	12,000	0%	12,000	12,242	2%	12,000	12,489	4%	12,000	12,997	8%
Delta	Blake Field	AJZ	2,910	2,910	0%	2,910	2,969	2%	2,910	3,029	4%	2,910	3,152	8%
Denver	Centennial	APA	340,721	340,721	0%	350,585	390,401	**11%**	357,213	447,437	**25%**	371,008	588,093	**59%**
Denver	Colorado Air and Space Port	CFO	79,704	79,704	0%	88,772	86,897	-2%	95,564	94,760	-1%	110,876	112,757	2%
Denver	Rocky Mountain Metropolitan	BJC	171,262	171,262	0%	180,968	186,881	3%	185,135	203,958	10%	193,848	243,039	**25%**
Erie	Erie Municipal	EIK	52,000	52,000	0%	52,000	52,261	1%	52,000	52,522	1%	52,000	53,050	2%
Fort Morgan	Fort Morgan Municipal	FMM	10,000	10,000	0%	10,000	10,198	2%	10,000	10,399	4%	10,000	10,815	8%
Granby	Granby-Grand County	GNB	2,600	2,600	0%	2,600	2,652	2%	2,600	2,706	4%	2,600	2,816	8%
Greeley	Greeley-Weld County	GXY	123,721	123,721	0%	130,012	135,217	4%	136,614	147,786	8%	150,866	176,552	**17%**
Holyoke	Holyoke	HEQ	8,500	8,500	0%	8,500	8,671	2%	8,500	8,846	4%	8,500	9,206	8%
Kremmling	Mc Elroy Airfield	20V	1,831	1,831	0%	1,986	1,868	-6%	2,144	1,906	-11%	2,495	1,983	**-21%**
La Junta	La Junta Municipal	LHX	9,258	9,258	0%	9,258	9,438	2%	9,258	9,623	4%	9,258	10,002	8%

Airport Information			2018			2023			2028			2038		
Associated City	Airport Name	FAA ID	FAA TAF	CASP Baseline		FAA TAF	CASP Forecast		FAA TAF	CASP Forecast		FAA TAF	CASP Forecast	
				Total (#)	Difference (%)		Total (#)	Difference (%)		Total (#)	Difference (%)		Total (#)	Difference (%)
Lamar	Lamar Municipal	LAA	3,399	3,399	0%	3,726	3,463	-7%	4,085	3,529	-14%	4,921	3,664	**-26%**
Leadville	Lake County	LXV	5,000	5,000	0%	5,000	5,060	1%	5,000	5,122	2%	5,000	5,249	5%
Limon	Limon Municipal	LIC	6,000	6,000	0%	6,000	6,030	0%	6,000	6,060	1%	6,000	6,120	2%
Longmont	Vance Brand	LMO	72,939	72,939	0%	80,629	74,401	-8%	89,107	75,893	-15%	108,840	78,966	**-27%**
Meeker	Meeker/Coulter Field	EEO	8,070	8,070	0%	8,070	8,232	2%	8,070	8,398	4%	8,070	8,739	8%
Monte Vista	Monte Vista Municipal	MVI	6,000	6,000	0%	6,000	6,030	1%	6,000	6,060	1%	6,000	6,121	2%
Nucla	Hopkins Field	AIB	4,220	4,220	0%	4,979	4,303	**-14%**	5,965	4,388	**-26%**	8,919	4,563	**-49%**
Pagosa Springs	Stevens Field	PSO	17,053	17,053	0%	18,117	18,574	3%	19,252	20,237	5%	21,775	24,043	10%
Rangely	Rangely	4V0	47,115	47,115	0%	47,115	48,065	2%	47,115	49,033	4%	47,115	51,030	8%
Rifle	Rifle Garfield County	RIL	14,561	14,561	0%	15,482	16,712	8%	16,517	19,183	**16%**	18,908	25,274	**34%**
Salida	Harriet Alexander Field	ANK	4,053	4,053	0%	4,053	4,133	2%	4,053	4,214	4%	4,053	4,383	8%
Steamboat Springs	Steamboat Springs	SBS	11,112	11,112	0%	13,693	11,336	**-17%**	16,873	11,564	**-31%**	25,617	12,035	-53%
Sterling	Sterling Municipal	STK	2,176	2,176	0%	2,176	2,219	2%	2,176	2,263	4%	2,176	2,354	8%
Trinidad	Perry Stokes	TAD	5,880	5,880	0%	5,880	5,986	2%	5,880	6,095	4%	5,880	6,319	7%
Walsenburg	Spanish Peaks Airfield	4V1	5,000	5,000	0%	5,000	5,025	1%	5,000	5,050	1%	5,000	5,101	2%
Wray	Wray Municipal	2V5	14,600	14,600	0%	14,600	14,894	2%	14,600	15,195	4%	14,600	15,813	8%
Yuma	Yuma Municipal	2V6	5,000	5,000	0%	5,000	5,101	2%	5,000	5,204	4%	5,000	5,416	8%
Commercial Service Airports Total			**1,260,156**	**1,260,156**	**0%**	**1,288,897**	**1,369,664**	**6%**	**1,350,423**	**1,491,174**	**10%**	**1,507,468**	**1,775,842**	**18%**
General Aviation Airports Total			**1,216,135**	**1,216,135**	**0%**	**1,272,749**	**1,310,974**	**3%**	**1,321,421**	**1,416,966**	**7%**	**1,431,905**	**1,668,410**	**17%**
System-wide Total			**2,476,291**	**2,476,291**	**0%**	**2,561,646**	**2,680,638**	**5%**	**2,671,844**	**2,908,140**	**9%**	**2,939,373**	**3,444,252**	**17%**

Sources: FAA TAF, 2019; 2018 Inventory & Data Form; Kimley-Horn, 2019

7.8. Alternative Forecasts

Alternative forecasts were conducted in addition to the 2020 CASP baseline forecasts presented in previous sections of this chapter. The alternative methods presented in this section differ in that the baseline data utilized for these forecasts are represented using the airport-reported responses to the 2018 Inventory & Data Form, when available. The alternative forecasts utilize the preferred methodology growth rates that were selected for each forecast indicator. The preferred growth rates were then applied to the airport-reported 2018 baseline. While the base-year and out-year data change airport-to-airport, the projected growth rates remain the same.

7.8.1. Alternative Based Aircraft Forecasts

The alternative forecast for based aircraft extracted data from airport-reported responses to the 2018 Inventory & Data Form.[11] The system-wide total of based aircraft from this source is 5,208. This is greater than the 4,633 based aircraft employed for the baseline CASP projections for 2018 in previous sections.

The airport fleet mix preferred methodology for based aircraft was applied to the alternative 2018 airport-reported data. The results are depicted in **Table 7.33**. To derive these results, the individual fleet mix at each airport was analyzed using the airport-reported inventory for based aircraft, including varying fleet mixes. There are differences in airport-reported compositions of fleet mix compared to data from the FAA's National Based Aircraft Inventory. This difference in fleet mixes resulted in the application of different growth rates for some airports than was used in the baseline methodology. The airport fleet mix methodology using the alternative airport-reported data predicted that the number of based aircraft could exceed over 6,000 based aircraft by 2038 (compared to 5,389 in the baseline scenario), with the addition of 811 based aircraft over the planning horizon (compared to 756 in the baseline scenario). Centennial Airport (APA) is projected to experience the largest increase in the number of based aircraft over the next 20 years in this alternative methodology. APA is anticipated to have almost 194 additional based aircraft by 2038 in this alternative based aircraft forecast.

[11] The only airport that did not report based aircraft data in the 2018 Inventory & Data Form was ALS. FAA 5010 Master Record data were used for ALS.

Table 7.33. Alternative Based Aircraft Forecasts, 2018-2038 (Airport-Reported)

Associated City	Airport Name	FAA ID	Historical	Projections				
			Airport-Reported 2018 Based Aircraft	2023	2028	2033	2038	2018 - 2038 CAGR
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	38	40	42	44	46	1.00%
Aspen	Aspen-Pitkin County	ASE	89	94	98	103	109	1.00%
Colorado Springs	Colorado Springs Municipal	COS	231	243	255	268	282	1.00%
Cortez	Cortez Municipal	CEZ	31	33	34	36	38	1.00%
Denver	Denver International	DEN	2	2	2	2	2	0.00%
Durango	Durango-La Plata County	DRO	63	66	70	73	77	1.00%
Eagle	Eagle County Regional	EGE	91	96	101	106	111	1.00%
Fort Collins/ Loveland	Northern Colorado Regional	FNL	255	268	282	296	311	1.00%
Grand Junction	Grand Junction Regional	GJT	126	132	139	146	154	1.00%
Gunnison	Gunnison-Crested Butte Regional	GUC	31	33	34	36	38	1.00%
Hayden	Yampa Valley	HDN	12	13	13	14	15	1.00%
Montrose	Montrose Regional	MTJ	81	85	89	94	99	1.00%
Pueblo	Pueblo Memorial	PUB	129	136	142	150	157	1.00%
Telluride	Telluride Regional	TEX	44	46	49	51	54	1.00%
General Aviation								
Akron	Colorado Plains Regional	AKO	14	14	15	15	15	0.50%
Blanca	Blanca	05V	0	0	0	0	0	0.00%
Boulder	Boulder Municipal	BDU	116	117	118	120	121	0.20%
Brush	Brush Municipal	7V5	5	5	5	5	5	0.20%
Buena Vista	Central Colorado Regional	AEJ	4	4	4	5	5	1.00%
Burlington	Kit Carson County	ITR	23	24	24	25	25	0.50%
Canon City	Fremont County	1V6	81	85	89	94	99	1.00%

Associated City	Airport Name	FAA ID	Historical	Projections				
			Airport-Reported 2018 Based Aircraft	2023	2028	2033	2038	2018 - 2038 CAGR
Center	Leach	1V8	4	4	4	4	4	0.20%
Colorado Springs	Meadow Lake	FLY	450	455	459	464	468	0.20%
Craig	Craig-Moffat	CAG	25	26	26	27	28	0.50%
Creede	Mineral County Memorial	C24	10	10	10	10	10	0.20%
Del Norte	Astronaut Kent Rominger	RCV	39	39	40	40	41	0.20%
Delta	Blake Field	AJZ	65	66	66	67	68	0.20%
Denver	Centennial	APA	880	925	972	1,022	1,074	1.00%
Denver	Colorado Air and Space Port	CFO	434	445	456	468	480	0.50%
Denver	Rocky Mountain Metropolitan	BJC	425	447	469	493	519	1.00%
Eads	Eads Municipal	9V7	9	9	9	9	9	0.20%
Erie	Erie Municipal	EIK	207	209	211	213	215	0.20%
Fort Morgan	Fort Morgan Municipal	FMM	32	32	33	33	33	0.20%
Glenwood Springs	Glenwood Springs Municipal	GWS	69	71	73	74	76	0.50%
Granby	Granby-Grand County	GNB	24	25	25	26	27	0.50%
Greeley	Greeley-Weld County	GXY	201	211	222	233	245	1.00%
Haxtun	Haxtun Municipal	17V	1	1	1	1	1	0.20%
Holly	Holly	K08	1	1	1	1	1	0.20%
Holyoke	Holyoke	HEQ	15	15	15	15	16	0.20%
Julesburg	Julesburg Municipal	7V8	5	5	5	5	5	0.20%
Kremmling	Mc Elroy Airfield	20V	22	22	22	23	23	0.20%
La Junta	La Junta Municipal	LHX	23	23	23	24	24	0.20%
La Veta	Cuchara Valley	07V	2	2	2	2	2	0.20%
Lamar	Lamar Municipal	LAA	28	28	29	29	29	0.20%
Las Animas	Las Animas-Bent County	7V9	11	11	11	11	11	0.20%
Leadville	Lake County	LXV	5	5	5	5	5	0.20%

Associated City	Airport Name	FAA ID	Historical	Projections				
			Airport-Reported 2018 Based Aircraft	2023	2028	2033	2038	2018 - 2038 CAGR
Limon	Limon Municipal	LIC	22	22	22	23	23	0.20%
Longmont	Vance Brand	LMO	294	301	309	317	325	0.50%
Meeker	Meeker/Coulter Field	EEO	10	10	10	10	10	0.20%
Monte Vista	Monte Vista Municipal	MVI	15	15	16	16	17	0.50%
Nucla	Hopkins Field	AIB	10	10	10	10	10	0.20%
Pagosa Springs	Stevens Field	PSO	40	40	41	41	42	0.20%
Paonia	North Fork Valley	7V2	20	20	20	21	21	0.20%
Rangely	Rangely	4V0	19	19	20	20	21	0.50%
Rifle	Rifle Garfield County	RIL	48	50	53	56	59	1.00%
Saguache	Saguache Municipal	04V	0	0	0	0	0	0.00%
Salida	Harriet Alexander Field	ANK	41	43	45	48	50	1.00%
Springfield	Springfield Municipal	8V7	10	10	10	10	10	0.20%
Steamboat Springs	Steamboat Springs	SBS	86	90	95	100	105	1.00%
Sterling	Sterling Municipal	STK	33	33	34	34	34	0.20%
Trinidad	Perry Stokes	TAD	20	20	20	21	21	0.20%
Walden	Walden-Jackson County	33V	3	3	3	3	3	0.20%
Walsenburg	Spanish Peaks Airfield	4V1	19	19	20	20	21	0.50%
Westcliffe	Silver West	C08	24	25	25	26	27	0.50%
Wray	Wray Municipal	2V5	27	27	28	28	28	0.20%
Yuma	Yuma Municipal	2V6	14	14	15	15	15	0.50%
		Commercial Service Airports Total	**1,223**	**1,285**	**1,351**	**1,420**	**1,492**	**1.00%**
		General Aviation Airports Total	**3,985**	**4,112**	**4,245**	**4,383**	**4,527**	**0.64%**
		System-wide Total	**5,208**	**5,397**	**5,595**	**5,802**	**6,019**	**0.73%**

**Note: Growth rates for some airports differ from the forecasts for based aircraft using the CASP 2018 baseline. This is due to differences in fleet mix composition between the airport-reported and CASP 2018 baselines.*

Sources: Woods and Poole Economics, Inc., 2018; 2018 Inventory & Data Form; Kimley-Horn, 2019

7.8.2. Alternative Commercial Operations Forecasts

Table 7.34 presents the alternative commercial operations forecast using the airport-reported 2018 data and applying the growth rates by service type methodology. 2018 TAF commercial operations data were used to develop the baseline forecasts. The number of commercial operations for the airport-reported alternative are slightly higher than the CASP baseline with more than 5,200 additional commercial operations. DEN comprises the largest proportion of commercial operations and is projected to reach over 900,000 operations by 2038 in the alternative commercial operations forecast. System-wide, operations are estimated to increase at a 1.97 percent CAGR and may reach over 1.04 million operations in the next 20-years in the alternative forecast.

Table 7.34. Alternative Commercial Operations Forecasts, 2018-2038 (Airport-Reported)

Associated City	Airport Name	FAA ID	Historical	Projections				
			2018 Airport-Reported Baseline	2023	2028	2033	2038	2018 - 2038 CAGR
Alamosa	San Luis Valley Regional	ALS	2,535	2,535	2,535	2,535	2,535	0.00%
Aspen	Aspen-Pitkin County	ASE	21,104	22,181	23,312	24,501	25,751	1.00%
Colorado Springs	Colorado Springs Municipal	COS	26,681	29,603	32,844	36,441	40,431	2.10%
Cortez	Cortez Municipal	CEZ	2,530	2,530	2,530	2,530	2,530	0.00%
Denver	Denver International	DEN	599,303	664,929	737,741	818,526	908,158	2.10%
Durango	Durango-La Plata County	DRO	8,211	8,630	9,070	9,533	10,019	1.00%
Eagle	Eagle County Regional	EGE	12,533	13,172	13,844	14,550	15,293	1.00%
Fort Collins/ Loveland	Northern Colorado Regional	FNL	3,546	3,546	3,546	3,546	3,546	0.00%
Grand Junction	Grand Junction Regional	GJT	13,398	14,081	14,800	15,555	16,348	1.00%
Gunnison	Gunnison-Crested Butte Regional	GUC	1,329	1,397	1,468	1,543	1,622	1.00%
Hayden	Yampa Valley	HDN	3,578	3,761	3,952	4,154	4,366	1.00%
Montrose	Montrose Regional	MTJ	7,050	7,410	7,788	8,185	8,602	1.00%
Pueblo	Pueblo Memorial	PUB	2,439	2,439	2,439	2,439	2,439	0.00%
Telluride	Telluride Regional	TEX	2,600	2,600	2,600	2,600	2,600	0.00%
	Commercial Service Airports Total		**706,837**	**778,813**	**858,469**	**946,638**	**1,044,239**	**1.97%**

Sources: FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2019

7.8.3. Alternative GA Operations Forecasts

The alternative GA operations forecast methodology applied the preferred ARC methodology growth rates to the total annual GA operations in 2018, as reported by the airports. Using the airport-reported data for 2018, a total of 1,559,480 operations are estimated for the alternative GA operations forecast baseline, slightly less overall. GA operations at commercial airports and GA airports are estimated at 347,850 and 1,211,630, respectively. Applying the ARC methodology to the alternative 2018 GA operations projects GA operations to exceed 2.2 million by 2038. The number of GA operations at commercial service airports are projected to reach over half a million in the next 20 years. GA airports are anticipated to exceed 1.5 million GA operations in 2038 using the airport-reported baseline for GA operations.

Table 7.35. Alternative GA Operations Forecasts, 2018-2038 (Airport-Reported)

Associated City	Airport Name	FAA ID	Historical	Projections				
			2018 Airport-Reported GA Operations	2023	2028	2033	2038	2018 - 2038 CAGR
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	4,390	4,800	5,250	5,740	6,280	1.35%
Aspen	Aspen-Pitkin County	ASE	19,980	22,930	26,330	30,230	34,700	2.09%
Colorado Springs	Colorado Springs Municipal	COS	63,910	71,960	81,020	91,220	102,700	1.79%
Cortez	Cortez Municipal	CEZ	8,800	8,980	9,160	9,340	9,530	0.30%
Denver	Denver International	DEN	3,980	4,570	5,240	6,020	6,910	2.09%
Durango	Durango-La Plata County	DRO	24,360	27,960	32,110	36,860	42,320	2.09%
Eagle	Eagle County Regional	EGE	24,790	28,460	32,670	37,510	43,060	2.09%
Fort Collins/ Loveland	Northern Colorado Regional	FNL	91,150	102,630	115,550	130,090	146,470	1.79%
Grand Junction	Grand Junction Regional	GJT	31,280	35,910	41,230	47,330	54,340	2.09%
Gunnison	Gunnison-Crested Butte Regional	GUC	6,930	7,800	8,780	9,890	11,130	1.79%
Hayden	Yampa Valley	HDN	6,320	7,110	8,010	9,010	10,150	1.80%

Associated City	Airport Name	FAA ID	Historical 2018 Airport-Reported GA Operations	Projections 2023	2028	2033	2038	2018 - 2038 CAGR
Montrose	Montrose Regional	MTJ	29,400	33,750	38,750	44,490	51,080	2.09%
Pueblo	Pueblo Memorial	PUB	21,560	24,280	27,330	30,770	34,650	1.79%
Telluride	Telluride Regional	TEX	11,000	12,380	13,940	15,700	17,680	1.80%
General Aviation								
Akron	Colorado Plains Regional	AKO	19,500	19,890	20,290	20,700	21,120	0.30%
Blanca	Blanca	05V	1,000	1,010	1,010	1,020	1,020	0.05%
Boulder	Boulder Municipal	BDU	50,580	51,600	52,640	53,700	54,790	0.30%
Brush	Brush Municipal	7V5	1,460	1,470	1,480	1,480	1,490	0.07%
Buena Vista	Central Colorado Regional	AEJ	4,560	4,650	4,750	4,840	4,940	0.30%
Burlington	Kit Carson County	ITR	1,000	1,020	1,040	1,060	1,080	0.29%
Canon City	Fremont County	1V6	16,440	16,770	17,100	17,450	17,800	0.30%
Center	Leach	1V8	10	10	10	10	10	0.06%
Colorado Springs	Meadow Lake	FLY	52,500	52,760	53,030	53,290	53,560	0.08%
Craig	Craig-Moffat	CAG	12,000	12,240	12,490	12,740	13,000	0.30%
Creede	Mineral County Memorial	C24	1,440	1,450	1,450	1,460	1,470	0.07%
Del Norte	Astronaut Kent Rominger	RCV	5,480	5,590	5,700	5,810	5,930	0.30%

Associated City	Airport Name	FAA ID	Historical	Projections				
			2018 Airport-Reported GA Operations	2023	2028	2033	2038	2018 - 2038 CAGR
Delta	Blake Field	AJZ	3,030	3,090	3,150	3,220	3,280	0.30%
Denver	Centennial	APA	337,260	387,190	444,520	510,340	585,900	2.09%
Denver	Colorado Air and Space Port	CFO	88,510	96,770	105,800	115,670	126,460	1.35%
Denver	Rocky Mountain Metropolitan	BJC	168,060	183,730	200,880	219,620	240,110	1.35%
Eads	Eads Municipal	9V7	710	720	720	720	730	0.08%
Erie	Erie Municipal	EIK	54,000	54,270	54,540	54,820	55,090	0.08%
Fort Morgan	Fort Morgan Municipal	FMM	9,800	10,000	10,200	10,400	10,610	0.30%
Glenwood Springs	Glenwood Springs Municipal	GWS	22,020	22,460	22,920	23,380	23,850	0.30%
Granby	Granby-Grand County	GNB	2,580	2,630	2,690	2,740	2,790	0.30%
Greeley	Greeley-Weld County	GXY	122,000	133,380	145,830	159,430	174,310	1.35%
Haxtun	Haxtun Municipal	17V	90	90	90	90	90	0.00%
Holly	Holly	K08	1,090	1,090	1,100	1,100	1,110	0.09%
Holyoke	Holyoke	HEQ	8,500	8,670	8,850	9,020	9,210	0.30%
Julesburg	Julesburg Municipal	7V8	310	310	320	320	320	0.16%
Kremmling	Mc Elroy Airfield	20V	1,800	1,840	1,870	1,910	1,950	0.29%

Associated City	Airport Name	FAA ID	Historical	Projections				
			2018 Airport-Reported GA Operations	2023	2028	2033	2038	2018 - 2038 CAGR
La Junta	La Junta Municipal	LHX	8,910	9,090	9,270	9,460	9,650	0.30%
La Veta	Cuchara Valley	07V	10	10	10	10	10	0.00%
Lamar	Lamar Municipal	LAA	4,600	4,690	4,790	4,880	4,980	0.30%
Las Animas	Las Animas-Bent County	7V9	830	840	840	840	850	0.06%
Leadville	Lake County	LXV	2,800	2,860	2,910	2,970	3,030	0.29%
Limon	Limon Municipal	LIC	5,930	5,960	5,990	6,020	6,050	0.07%
Longmont	Vance Brand	LMO	74,680	76,190	77,720	79,290	80,890	0.30%
Meeker	Meeker/Coulter Field	EEO	8,050	8,210	8,380	8,550	8,720	0.30%
Monte Vista	Monte Vista Municipal	MVI	6,000	6,030	6,060	6,090	6,120	0.07%
Nucla	Hopkins Field	AIB	4,300	4,390	4,480	4,570	4,660	0.30%
Pagosa Springs	Stevens Field	PSO	5,750	6,290	6,870	7,510	8,220	1.35%
Paonia	North Fork Valley	7V2	2,000	2,010	2,020	2,030	2,040	0.07%
Rangely	Rangely	4V0	14,920	15,220	15,530	15,840	16,160	0.30%
Rifle	Rifle Garfield County	RIL	10,780	12,380	14,210	16,310	18,730	2.09%
Saguache	Saguache Municipal	04V	70	70	70	70	70	0.00%
Salida	Harriet Alexander Field	ANK	6,250	6,380	6,500	6,640	6,770	0.30%

Associated City	Airport Name	FAA ID	Historical	Projections				
			2018 Airport-Reported GA Operations	2023	2028	2033	2038	2018 - 2038 CAGR
Springfield	Springfield Municipal	8V7	4,580	4,600	4,620	4,640	4,670	0.08%
Steamboat Springs	Steamboat Springs	SBS	9,050	9,240	9,420	9,610	9,810	0.30%
Sterling	Sterling Municipal	STK	3,220	3,280	3,350	3,410	3,480	0.30%
Trinidad	Perry Stokes	TAD	620	640	650	660	680	0.30%
Walden	Walden-Jackson County	33V	1,100	1,120	1,140	1,160	1,190	0.30%
Walsenburg	Spanish Peaks Airfield	4V1	1,380	1,380	1,390	1,400	1,410	0.11%
Westcliffe	Silver West	C08	800	800	810	810	820	0.12%
Wray	Wray Municipal	2V5	24,600	25,100	25,600	26,120	26,640	0.30%
Yuma	Yuma Municipal	2V6	5,000	5,100	5,200	5,310	5,420	0.30%
		Commercial Service	**347,850**	**393,520**	**445,370**	**504,200**	**571,000**	**2.51%**
		General Aviation	**1,211,630**	**1,307,080**	**1,413,720**	**1,532,990**	**1,666,640**	**1.61%**
		State-wide	**1,559,480**	**1,700,600**	**1,859,090**	**2,037,190**	**2,237,640**	**1.82%**

Sources: CDOT Division of Aeronautics, 2019; Woods and Poole Economics, Inc, 2018; 2018 Inventory & Data Form; Kimley-Horn, 2019

7.8.4. Alternative Total Operations Forecasts

Table 7.36 presents the total operations forecast using the airport-reported alternative methodology. Echoing previous operations forecasts, the total number of operations are anticipated to increase steadily for the next 20 years. Similar to the CASP baseline forecast, the alternative forecast methodology is estimated to surpass 3 million operations in 2033 and 3.5 million operations in 2038. Centennial Airport (APA) is predicted to experience the fastest growth in total operations. It's estimated that total operations at APA may rise at 2.07 percent CAGR with the airport handling over 247,000 added operations by 2038 in the alternative total operations forecast. Rifle Garfield County (RIL) is estimated to experience the fastest operations growth rate. RIL's total operations are predicted to grow to almost 8,000 total operations at 2.09 percent CAGR. Commercial service airports are anticipated to realize an annual increase of 1.39 percent while, GA airports are predicted to grow at 1.18 percent annually. Total operations system-wide are forecasted to increase at 1.29 percent annually and estimated to add over 1 million operations by 2038.

Table 7.36. Alternative Total Operations Forecast, 2018-2038 (Airport-Reported)

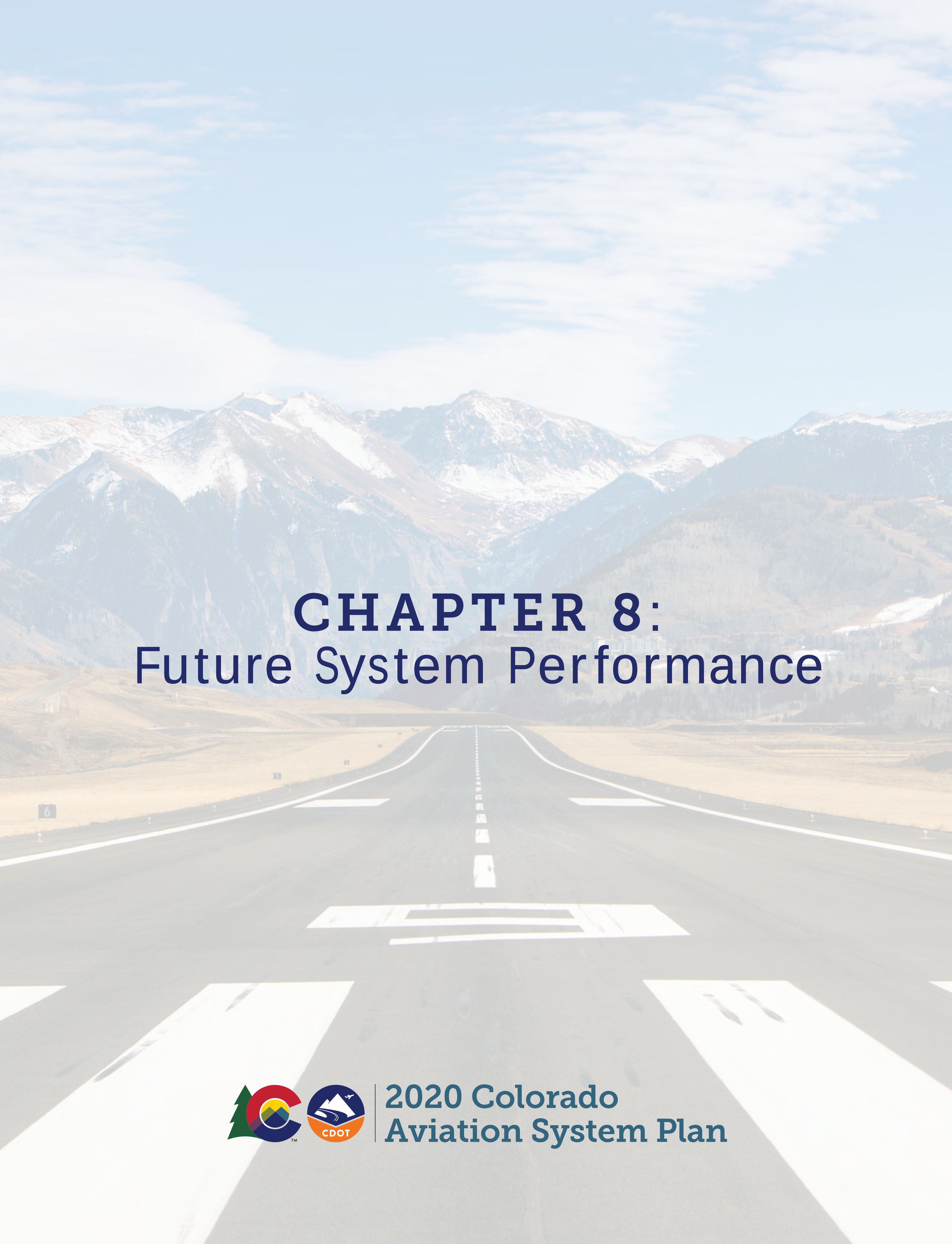
Associated City	Airport Name	FAA ID	Historic	Total Operations Projections				
			Airport-Reported 2018 Total Operations	2023	2028	2033	2038	2018 - 2038 CAGR
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	8,403	8,811	9,261	9,751	10,291	0.78%
Aspen	Aspen-Pitkin County	ASE	41,238	45,270	49,801	54,890	60,610	1.47%
Colorado Springs	Colorado Springs Municipal	COS	127,667	138,636	150,937	164,734	180,204	1.32%
Cortez	Cortez Municipal	CEZ	11,330	11,510	11,690	11,870	12,060	0.23%
Denver	Denver International	DEN	603,403	669,620	743,102	824,667	915,189	1.57%
Durango	Durango-La Plata County	DRO	33,121	37,142	41,732	46,945	52,891	1.78%
Eagle	Eagle County Regional	EGE	42,282	46,594	51,476	57,022	63,315	1.55%
Fort Collins/Loveland	Northern Colorado Regional	FNL	94,896	106,376	119,296	133,836	150,216	1.74%
Grand Junction	Grand Junction Regional	GJT	47,040	52,355	58,394	65,249	73,052	1.68%
Gunnison	Gunnison-Crested Butte Regional	GUC	8,717	9,657	10,708	11,893	13,212	1.58%
Hayden	Yampa Valley	HDN	9,910	10,888	11,979	13,181	14,533	1.45%
Montrose	Montrose Regional	MTJ	38,450	43,160	48,538	54,675	61,682	1.80%
Pueblo	Pueblo Memorial	PUB	191,712	194,431	197,481	200,921	204,801	0.26%
Telluride	Telluride Regional	TEX	14,100	15,480	17,040	18,800	20,780	1.48%
General Aviation								
Akron	Colorado Plains Regional	AKO	20,500	20,890	21,290	21,700	22,120	0.29%
Blanca	Blanca	05V	1,000	1,010	1,010	1,020	1,020	0.05%
Boulder	Boulder Municipal	BDU	50,582	51,600	52,640	53,700	54,790	0.30%
Brush	Brush Municipal	7V5	1,461	1,470	1,480	1,480	1,490	0.07%
Buena Vista	Central Colorado Regional	AEJ	4,700	4,790	4,890	4,980	5,080	0.29%
Burlington	Kit Carson County	ITR	8,001	1,021	1,041	1,061	1,081	0.29%
Canon City	Fremont County	1V6	16,690	17,025	17,355	17,705	18,055	0.29%
Center	Leach	1V8	833	840	840	850	850	0.06%
Colorado Springs	Meadow Lake	FLY	75,000	75,260	75,530	75,790	76,060	0.05%
Craig	Craig-Moffat	CAG	12,000	12,240	12,490	12,740	13,000	0.30%
Creede	Mineral County Memorial	C24	1,439	1,450	1,450	1,460	1,470	0.07%
Del Norte	Astronaut Kent Rominger	RCV	5,475	5,590	5,700	5,810	5,930	0.30%
Delta	Blake Field	AJZ	3,030	3,090	3,150	3,220	3,280	0.30%
Denver	Centennial	APA	342,506	392,440	449,770	515,590	591,150	2.07%
Denver	Colorado Air and Space Port	CFO	91,600	99,857	108,887	118,757	129,547	1.31%
Denver	Rocky Mountain Metropolitan	BJC	172,057	187,732	204,882	223,622	244,112	1.32%
Eads	Eads Municipal	9V7	1,250	1,260	1,260	1,270	1,280	0.08%
Erie	Erie Municipal	EIK	54,060	54,330	54,600	54,880	55,150	0.07%
Fort Morgan	Fort Morgan Municipal	FMM	10,000	10,200	10,400	10,600	10,810	0.29%

Associated City	Airport Name	FAA ID	Historic Airport-Reported 2018 Total Operations	Total Operations Projections 2023	2028	2033	2038	2018 - 2038 CAGR
Glenwood Springs	Glenwood Springs Municipal	GWS	22,020	22,460	22,920	23,380	23,850	0.30%
Granby	Granby-Grand County	GNB	2,600	2,650	2,710	2,760	2,810	0.29%
Greeley	Greeley-Weld County	GXY	122,000	133,380	145,830	159,430	174,310	1.35%
Haxtun	Haxtun Municipal	17V	90	90	90	90	90	0.00%
Holly	Holly	K08	1,085	1,090	1,100	1,100	1,110	0.09%
Holyoke	Holyoke	HEQ	8,500	8,670	8,850	9,020	9,210	0.30%
Julesburg	Julesburg Municipal	7V8	312	310	320	320	320	0.16%
Kremmling	Mc Elroy Airfield	20V	1,800	1,840	1,870	1,910	1,950	0.29%
La Junta	La Junta Municipal	LHX	9,345	9,528	9,708	9,898	10,088	0.29%
La Veta	Cuchara Valley	07V	50	46	46	46	46	0.00%
Lamar	Lamar Municipal	LAA	4,700	4,790	4,890	4,980	5,080	0.29%
Las Animas	Las Animas-Bent County	7V9	856	864	864	864	874	0.06%
Leadville	Lake County	LXV	4,800	4,860	4,910	4,970	5,030	0.17%
Limon	Limon Municipal	LIC	6,000	6,030	6,060	6,090	6,120	0.07%
Longmont	Vance Brand	LMO	75,102	76,610	78,140	79,710	81,310	0.30%
Meeker	Meeker/Coulter Field	EEO	8,060	8,220	8,390	8,560	8,730	0.30%
Monte Vista	Monte Vista Municipal	MVI	6,000	6,030	6,060	6,090	6,120	0.07%
Nucla	Hopkins Field	AIB	4,300	4,390	4,480	4,570	4,660	0.30%
Pagosa Springs	Stevens Field	PSO	5,870	6,410	6,990	7,630	8,340	1.32%
Paonia	North Fork Valley	7V2	2,000	2,010	2,020	2,030	2,040	0.07%
Rangely	Rangely	4V0	25,000	25,500	26,020	26,540	27,080	0.30%
Rifle	Rifle Garfield County	RIL	14,358	16,510	18,950	21,750	24,960	2.09%
Saguache	Saguache Municipal	04V	72	70	70	70	70	0.00%
Salida	Harriet Alexander Field	ANK	6,650	6,780	6,900	7,040	7,170	0.28%
Springfield	Springfield Municipal	8V7	4,575	4,600	4,620	4,640	4,670	0.08%
Steamboat Springs	Steamboat Springs	SBS	9,135	9,322	9,502	9,692	9,892	0.30%
Sterling	Sterling Municipal	STK	3,240	3,304	3,374	3,434	3,504	0.29%
Trinidad	Perry Stokes	TAD	5,880	5,990	6,100	6,210	6,320	0.27%
Walden	Walden-Jackson County	33V	1,103	1,126	1,146	1,166	1,196	0.30%
Walsenburg	Spanish Peaks Airfield	4V1	15,418	15,420	15,430	15,440	15,450	0.01%
Westcliffe	Silver West	C08	930	930	940	940	950	0.11%
Wray	Wray Municipal	2V5	24,600	25,100	25,600	26,120	26,640	0.30%
Yuma	Yuma Municipal	2V6	5,000	5,100	5,200	5,310	5,420	0.30%
		Commercial Service Airports Total	**1,272,269**	**1,389,929**	**1,521,435**	**1,668,434**	**1,832,835**	**1.39%**
		General Aviation Airports Total	**1,273,635**	**1,362,125**	**1,468,765**	**1,588,035**	**1,721,685**	**1.18%**
		System-wide Total	**2,545,904**	**2,752,054**	**2,990,200**	**3,256,469**	**3,554,520**	**1.29%**

Sources: 2018 Inventory & Data Form; Kimley-Horn, 2019

7.9. Summary

This chapter documents a baseline forecast as well as an alternative forecast for activity indicators in the Colorado airport system. These indicators include enplanements, based aircraft, and operations. The baseline forecast was developed for comparison to FAA TAF data, while the alternative airport-reported forecast can be used to show a potential range in activity that may be realized at airports given different 2018 data. The forecasts are used in subsequent chapters to evaluate future system needs, focusing on where additional facilities may be needed to accommodate projected growth.



CHAPTER 8:
Future System Performance

2020 Colorado
Aviation System Plan

Chapter 8. Future System Performance

As a natural progression from the results of **Chapter 6. Existing System Performance** and building upon the findings of **Chapter 7. Aviation Demand Forecasts**, this chapter introduces the desired performance targets for the future system in terms of performance measures (PMs) as established in **Chapter 1. Study Design and Goals**. Of note, system indicators (SIs) are not analyzed in this chapter as these provide supplementary information and are not used to infer direct system performance. The future performance targets reflect both the percent of airports by classification that should be achieving each measure, as well as statewide performance for Colorado's system to achieve the goals established at the inception of this study.

This chapter also evaluates the implications of future aviation demand on certain elements of the system's needs that are most affected by changes in based aircraft and operations. Evaluating both future performance targets and the implications of increased demand provides valuable information for planning and funding of future developments aimed at improving the overall performance of the system. Focused improvements to meet future performance targets strengthens the system's resiliency against market changes, enforces its position as a major economic generator, and continues to support a robust aviation industry.

8.1. Future System Performance

The following sections examine the existing system's performance and include future performance targets for each PM under each goal category established in **Chapter 1. Study Design and Goals**. Future performance targets are defined as the percent of airports by classification that *should* be achieving each PM to meet the overarching goals of the system plan. Future performance targets were established in concert with CDOT Division of Aeronautics and the Project Advisory Committee (PAC) after reviewing the performance of the aviation system in **Chapter 6. Existing System Performance**.

The PMs and future performance targets are arranged by goal category and include a brief explanation of the PM followed by the future performance targets. Targets have been established for most airport classifications, however, some are listed as "no target established." It should be noted that not establishing a target for specific airport classifications does not preclude an airport from seeking a project for their airport that relates to the PM. Tables in the following sections only show airports that do not meet the PM. Airports in which the future performance target for the PM does not apply, are "based on community need", or have a "no target established" are excluded from the tables.

8.1.1. Safety and Efficiency Goal

Safety remains at the forefront of the aviation industry and will continue to be the most important component in the future. This section analyzes the 2018 performance of the system and establishes the future performance targets for the four PMs relating to the safety and efficiency goal. The PMs under the safety and efficiency goal are listed below:

Safety and Efficiency

1. Percent of Airports with Approaches Negatively Impacted by Obstructions
2. Percent of Airports that Have Full Perimeter Wildlife Fencing
3. Percent of Airports that Have Adopted Appropriate Land Use Controls
4. Percent of NPIAS Airports that Meet Current FAA Design Standards Under AC/150/5300-13A

8.1.1.1. Percent of Airports with Approaches Negatively Impacted by Obstructions

Obstructions within the approach surface of a runway increase the risk of damage to property and potential injury or death to persons both in the plane and/or on the ground. They may take the form of man-made or naturally existing obstructions and coordination to either remove or take extra precautions to avoid aircraft collisions are imperative to overall safety. **Table 8.1** presents the 2018 performance and future performance targets.

Table 8.1. Percent of Airports by Classification with Approaches Negatively Impacted by Obstructions - 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	21%	0%
GA-National (2)	50%	0%
GA-Regional (5)	40%	0%
GA-Local (19)	21%	0%
GA-Community (16)	19%	0%
GA-Rural (10)	90%	0%
System-wide (66)	**33%**	**0%**

Source: 2018 Inventory & Data Form; Kimley-Horn, 2020

System-wide, 33 percent of airports have approaches negatively impacted by obstructions per the 2018 performance analysis documented in **Chapter 6.** Regardless of airport classification, airport ownership, or NPIAS classification, each airport in the system should strive to eliminate obstructions within the approach surface of each runway end. Due to the importance of maintaining safe approaches, zero CASP airports system-wide should have approaches negatively impacted by obstructions. It should be noted that this analysis is based on each airport's primary runway ends only. Airport sponsors with multiple runways should work to clear approaches to all runway ends. It should also be noted that this analysis only documents the obstruction penetrating the approach surface. Some obstacles may or may not already be lighted.

Airports that are negatively impacted by an obstruction on at least one end of their primary runway are shown in **Table 8.2**. The table shows the primary runway ends, obstruction by runway end, and the action needed to meet the target.

Table 8.2. Airports by Classification That Have an Approach Negatively Impacted by Obstructions

Associated City	Airport Name	FAA ID	Primary Runway	Obstruction	Action to Meet Future Performance Target
Commercial Service					
Alamosa	San Luis Valley Regional	ALS	02/20	Tree	Remove Obstruction
Cortez	Cortez Municipal	CEZ	03/21	Trees/Road	Remove Obstruction
Eagle	Eagle County Regional	EGE	07/25	Tree	Remove Obstruction
GA-National					
Denver	Centennial	APA	17L/35R	Powerline	Light Obstruction*
GA-Regional					
Colorado Springs	Meadow Lake	FLY	15/33	Road	Remove Obstruction
Longmont	Vance Brand	LMO	11/29	Tree/Road	Remove Obstruction
GA-Local					
Boulder	Boulder Municipal	BDU	08/26	Trees	Remove Obstruction
Craig	Craig-Moffat	CAG	07/25	Powerline/Trees	Light/Remove Obstructions*
Fort Morgan	Fort Morgan Municipal	FMM	14/32	Road	Remove Obstruction
Glenwood Springs	Glenwood Springs Municipal	GWS	14/32	Trees/Road	Remove Obstruction
GA-Community					
Granby	Granby-Grand County	GNB	09/27	Fence	Remove Obstruction
Holyoke	Holyoke	HEQ	14/32	Tree	Remove Obstruction
Westcliffe	Silver West	C08	13/31	Ground or Rising Terrain	Light Obstruction*
GA-Rural					
Blanca	Blanca	05V	03/21	Road/Road	Remove Obstruction
Brush	Brush Municipal	7V5	07/25	Tree/Fence	Remove Obstruction
Center	Leach	1V8	12/30	Building/Powerline	Light Obstructions*
Eads	Eads Municipal	9V7	17/35	Road/Road	Remove Obstruction
Haxtun	Haxtun Municipal	17V	0826	Road/Road	Remove Obstruction
Holly	Holly	K08	17/35	Tree/Fence	Remove Obstruction

Associated City	Airport Name	FAA ID	Primary Runway	Obstruction	Action to Meet Future Performance Target
Julesburg	Julesburg Municipal	7V8	13/31	Tank/Powerline	Light Obstructions*
La Veta	Cuchara Valley	07V	06/24	Road	Remove Obstruction
Saguache	Saguache Municipal	04V	11/29	Road	Remove Obstruction

**Note: In some cases, removing an obstacle isn't feasible and therefor the best action is to light the obstruction. However, lighting and obstruction does not satisfy the performance target.*

Sources: FAA Form 5010; Kimley-Horn, 2020

Airports should work with local municipalities and other stakeholders to mitigate obstructions within the approach to reduce the risk of aircraft accidents. In cases where it is not feasible to remove an obstruction, airports should coordinate with the applicable stakeholders to properly install lights on the obstruction to improve visibility and alert pilots of the obstruction. In cases where this may be the only course of action, it should be noted that lighting the obstruction does not constitute the airport as meeting the target.

8.1.1.2. Percent of Airports that have Full Perimeter Wildlife Fencing

Full perimeter wildlife fencing is installed to mitigate wildlife collisions or strikes on airport property. **Table 8.3** summarizes the 2018 performance and future performance target for each airport classification and the system in its entirety.

Table 8.3. Percent of Airports by Classification with Full Perimeter Wildlife Fencing – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	79%	100%
GA-National (2)	100%	100%
GA-Regional (5)	40%	100%
GA-Local (19)	58%	100%
GA-Community (16)	37%	100%
GA-Rural (10)	0%	No Target Established
System-wide (66)	**49%**	**85%**

Source: 2018 Inventory & Data Form; Kimley-Horn, 2020

The 2018 performance shows that 49 percent of system-wide airports have full perimeter wildlife fencing. The future performance target is for wildlife fencing to be installed at all Commercial Service through GA-Community airports (85 percent of the system). All GA-Rural airports are non-NPIAS and have the lowest activity levels in the state. Wildlife fencing is FAA Airport Improvement Program (AIP) eligible, and given the high levels of wildlife activity in the state, full perimeter wildlife fencing is recommended for all NPIAS airports. For the higher activity non-NPIAS airports classified as GA-Local and GA-Community, wildlife fencing could also enhance safety. Airports with full perimeter wildlife fencing needs are shown in **Table 8.4** by classification.

Table 8.4. Airports by Classification with Full Perimeter Wildlife Fencing Needs

Associated City	Airport Name	FAA ID
Commercial Service		
Durango	Durango-La Plata County	DRO
Grand Junction	Grand Junction Regional	GJT
Pueblo	Pueblo Memorial	PUB
GA-Regional		
Colorado Springs	Meadow Lake	FLY
Denver	Colorado Air and Space Port	CFO
Longmont	Vance Brand	LMO

Associated City	Airport Name	FAA ID
GA-Local		
Burlington	Kit Carson County	ITR
Canon City	Fremont County	1V6
Del Norte	Astronaut Kent Rominger	RCV
Delta	Blake Field	AJZ
Erie	Erie Municipal	EIK
Fort Morgan	Fort Morgan Municipal	FMM
Glenwood Springs	Glenwood Springs Municipal	GWS
Limon	Limon Municipal	LIC
GA-Community		
Akron	Colorado Plains Regional	AKO
Creede	Mineral County Memorial	C24
Holyoke	Holyoke	HEQ
Las Animas	Las Animas-Bent County	7V9
Monte Vista	Monte Vista Municipal	MVI
Nucla	Hopkins Field	AIB
Springfield	Springfield Municipal	8V7
Westcliffe	Silver West	C08
Wray	Wray Municipal	2V5
Yuma	Yuma Municipal	2V6

Source: 2018 Inventory & Data Form

Due to the high costs associated with installing full perimeter wildlife fencing with security gates and signage, airports should coordinate with FAA or CDOT Division of Aeronautics to perform a more informational analysis to discern the feasibility of projects related to fencing for their airport. Airports that already have partial perimeter wildlife fencing should also initiate coordination with FAA or CDOT Division of Aeronautics to review cost feasibility for installing wildlife fencing around remaining facilities.

8.1.1.3. Percent of Airports that have Adopted Appropriate Land Use Controls

The adoption of appropriate land use controls by the airport's local zoning authority increases the airport's ability to adequately expand operations in response to changing aviation demand or regulations. In addition, land use controls aid the surrounding communities by mitigating noise incompatibility and reducing negative externalities of being too closely located near airport operations. **Table 8.5a** summarizes the 2018 performance and future performance targets related to land use controls.

Table 8.5a. Percent of Airports by Classification that have Adopted Appropriate Land Use Controls – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	71%	100%
GA-National (2)	100%	100%
GA-Regional (5)	100%	100%
GA-Local (19)	74%	100%
GA-Community (16)	50%	100%
GA-Rural (10)	20%	100%
System-wide (66)	**62%**	**100%**

Source: 2018 Inventory & Data Form, Kimley-Horn, 2020

Sixty-two percent of airports system-wide have local zoning authorities that have adopted appropriate land use controls per the 2018 performance. The preservation of compatible land uses surrounding airports is integral to safe and efficient airport operations. Setting future performance targets at 100 percent for the system conveys CDOT Division of Aeronautics emphasis on the importance of mitigating risks to people and persons on aircraft, on airport, and in the surrounding communities.

In addition to land use controls, adopting appropriate height controls reduces development conflicts that could negatively impact the airspace around airports. **Table 8.5b** shows the 2018 performance and the targets set for future performance.

Table 8.5b. Percent of Airports by Classification that have Adopted Appropriate Height Controls – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	64%	100%
GA-National (2)	100%	100%
GA-Regional (5)	100%	100%
GA-Local (19)	68%	100%
GA-Community (16)	50%	100%
GA-Rural (10)	10%	100%
System-wide (66)	**58%**	**100%**

Source: 2018 Inventory & Data Form; Kimley-Horn, 2020

More than half of the airports system-wide have local zoning authorities that have adopted appropriate height controls. The adoption of height controls, as well as land use controls, is inexpensive and serves as a significant mechanism for promoting safety in the airport environs. To further protect against risks relating to incompatible developments, all system airports' targets are set at 100 percent.

Airports whose local zoning authority has not adopted land use controls and/or height controls are presented by classification in **Table 8.6**.

Table 8.6. Airports by Classification That Do Not Have Land Use Controls and/or Height Controls

Associated City	Airport Name	FAA ID	Actions to Meet Future Performance Target	
			Adopt Land Use Controls	Adopt Height Controls
Commercial Service				
Alamosa	San Luis Valley Regional	ALS	✓	✓
Cortez	Cortez Municipal	CEZ	✓	✓
Grand Junction	Grand Junction Regional	GJT		✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	✓
Pueblo	Pueblo Memorial	PUB	✓	✓
GA-Local				
Burlington	Kit Carson County	ITR	✓	✓
Craig	Craig-Moffat	CAG	✓	✓
Delta	Blake Field	AJZ	✓	✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓	✓
Salida	Harriet Alexander Field	ANK		✓
Steamboat Springs	Steamboat Springs	SBS	✓	✓
GA-Community				
Las Animas	Las Animas-Bent County	7V9	✓	✓
Meeker	Meeker/Coulter Field	EEO	✓	✓
Monte Vista	Monte Vista Municipal	MVI	✓	✓
Nucla	Hopkins Field	AIB	✓	✓
Paonia	North Fork Valley	7V2	✓	✓
Rangely	Rangely	4V0	✓	
Springfield	Springfield Municipal	8V7	✓	✓
Wray	Wray Municipal	2V5	✓	✓
Yuma	Yuma Municipal	2V6		✓
GA-Rural				
Blanca	Blanca	05V	✓	✓
Brush	Brush Municipal	7V5	✓	✓
Center	Leach	1V8	✓	✓
Eads	Eads Municipal	9V7	✓	✓
Haxtun	Haxtun Municipal	17V		✓
Holly	Holly	K08	✓	✓
Julesburg	Julesburg Municipal	7V8	✓	✓
La Veta	Cuchara Valley	07V	✓	✓
Saguache	Saguache Municipal	04V	✓	✓

Source: 2018 Inventory & Data Form

Airports who have not adopted land use and/or height controls should initiate conversations with their local zoning authority or authorities. Adoption of such regulations may call for coordination with other local decision-makers, planning authorities, and other stakeholders that may be impacted by regulatory planning changes. A number of resources are available to airports and local zoning authorities to develop and adopt land use, height controls, or other zoning related regulations specifically geared towards airport compatibility, specifically ACRP Report 27*: Enhancing Airport Land Use Compatibility*, and FAA AC 150/5020-1, *Noise Control and Compatibility Planning for Airports*.

States across the U.S. can support compatible land use planning efforts at their airports in many ways. The level of involvement varies significantly from state to state based on state laws, municipal authority, community perception, and more. On the stricter side of the spectrum, states have enacted legislation requiring municipalities with public-use airports to adopt and enforce local-level airport zoning that controls both land use and height near airport environs. Most commonly, state law is modeled after the Code of Federal Regulation (CFR) Part 77 which establishes allowable heights of manmade structures and natural features near an airport based on the type of runway approach(es) they have. This aligns federal regulations with state requirements and allows states and local municipalities to enforce prohibition of development that could negatively impact an airport or its local community.

On the other end of the spectrum, states have developed land use compatibility guidebooks that are intended to educate airport sponsors, local communities, and other stakeholders on the importance of planning for compatible land uses near airport environs. These guidebooks are educational tools that often include a collection of resources for airport sponsors and communities to use to enhance the level of compatibility near their facility. Examples of these resources include model zoning ordinances, sample real estate disclosures and deed restrictions, right-of-first-refusal agreements, and more. Airports can then choose to use the information in the guidebook and provided resources in a way that meets their needs.

While there is no one-size-fits-all approach to achieving or promoting compatibility at the state level, several states offer examples of solutions that work toward this common goal. Florida state law requires all municipalities with an "airport hazard area" to adopt and enforce airport zoning. States like Indiana and Ohio have laws regulating the height of structures near airports. California law requires the establishment of Airport Land Use Compatibility Plans by each county's Airport Land Use Commission. States like Iowa and Washington provide land use compatibility guidebooks for their airports and stakeholders – some are provided as standalone resources while others serve as a companion to state law. Recently, the state of South Carolina developed a Compatible Land Use Evaluation (CLUE) Tool – an interactive online program to submit development proposals to local planners and the state for evaluation of airport compatibility. Whatever the solution, state support of compatibility measures can increase the likelihood for airport- and community-compatible development. It is understood that significant challenges would arise from enacting airport land use into state law. However, developing a land use compatibility guidebook similar to Iowa and Washington, or developing a CLUE tool similar to South Carolina, could be an option for CDOT Division of Aeronautics to promote and improve land use compatibility around airports.

8.1.1.4. Percent of NPIAS Airports that Meet Current FAA Design Standards under AC 150/5300-13A

In 2014 the FAA made changes to its guidance related to how airfields are designed. These changes were adopted to reduce "hot spots" and increase pilots' situational awareness while operating aircraft in movement areas. Multiple FAA design methods were revised; however, three specific changes were analyzed as part of the 2020 CASP based on FAA AC 150/5300-13A, Change 1, *Airport Design*:

- **Direct Access**. Do not design taxiways to lead directly from an apron to a runway without making a turn. Such configurations can lead to confusion when a pilot typically expects to encounter a parallel taxiway but instead accidentally enters a runway (see **Figure 8.1**).

Figure 8.1. Direct Access Taxiway

Sources: Google Earth; Kimley-Horn, 2019

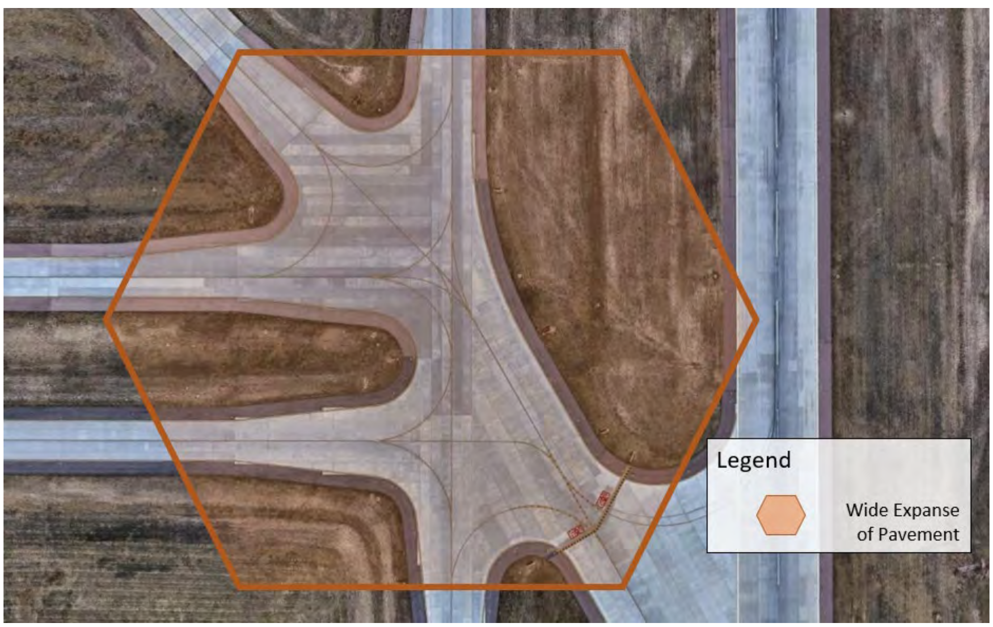
- **Three-Node Concept**. Good airport design practices keep taxiway intersections simple by reducing the number of taxiways intersecting at a single location and allows for proper placement of airfield markings, signage, and lighting. Complex intersections increase the possibility of pilot error. The "three-node concept" means that a pilot is presented with ***no more*** than three choices at an intersection – ideally, left, right, and straight ahead. **Figure 8.2** shows an example of where there are more than three nodes and is therefore a conflict with this concept.

Figure 8.2. Three-Node Concept Conflict

Sources: Google Earth; Kimley-Horn, 2019

- **Wide Expanse of Pavement**. Taxiway to runway interface encompassing wide expanses of pavement is not recommended. Wide pavements require placement of signs far from the pilot's eye and reduce the conspicuity of other visual cues. Under low visibility conditions or due to pilot focus on the centerline, signs can be missed (see **Figure 8.3**).

Figure 8.3. Wide Expanse of Pavement



Sources: Google Earth; Kimley-Horn, 2019

Table 8.7a shows the 2018 performance and future performance targets set for NPIAS airports related to taxiway geometry standards. It should be noted that this PM is specific to NPIAS airports only (49 total CASP airports are included in the latest NPIAS).

Table 8.7a. Percent of NPIAS Airports that Meet Current Taxiway Geometry Standards – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	0%	100%
GA-National (2)	0%	100%
GA-Regional (5)	20%	100%
GA-Local (17)	6%	100%
GA-Community (11)	27%	100%
System-wide (49)	**10%**	**100%**

Sources: Individual Airport ALPs; Google Earth; Kimley-Horn, 2020

Due to the recent timing of these changes outlined in AC 150/5300-13A (2014), only 10 percent of NPIAS airports system-wide meet the current FAA design standards related to taxiway geometry standards. It is important to note that many of the 2018 performance issues are a direct result of these recent changes in FAA design criteria compared to the criteria that were in place when the infrastructure was originally planned and constructed. Future performance targets for taxiway geometry are established at 100 percent for all NPIAS airports since all NPIAS airports should follow FAA taxiway design standards, however, FAA and CDOT Division of Aeronautics plan to address the geometry issues as part of other projects and are not planning to implement projects that are only to meet these newer standards unless the airport is identified by FAA on the list of airports with "runway incursion mitigation" or RIM needs.

Runway Safety Areas (RSAs) were analyzed in addition to taxiway geometries. As noted in **Chapter 6.** RSAs provide a buffer area around the runway to protect aircraft that may veer from the runway. The 2018 performance and future performance targets for NPIAS airports that meet current RSA standards are shown in **Table 8.7b**.

Table 8.7b. Percent of NPIAS Airport that Meet Current RSA Standards – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	71%	100%
GA-National (2)	100%	100%
GA-Regional (5)	80%	100%
GA-Local (17)	71%	100%
GA-Community (11)	91%	100%
System-wide (49)	**78%**	**100%**

Sources: Individual Airport ALPs; Google Earth; Kimley-Horn, 2020

Similar to the taxiway design standards targets, future performance targets for RSA standards were established at 100 percent for the 49 NPIAS CASP airports. Airports with taxiway geometry deficiencies (direct access, three-node intersections, and wide expanses of pavement) and/or RSA design standard deficiencies per FAA AC 150/5300-13A, Change 1, are shown in **Table 8.8** and arranged by airport classification. As previously stated, airports that were found to not meet updated taxiway design geometries per recent changes may have complied with previous design standards. Airports are not required to address these issues immediately but should consider addressing them as other airfield projects are conducted.

Table 8.8. Airports by Classification with FAA Design Standard Needs

Associated City	Airport Name	FAA ID	Actions to Meet Future Performance Targets			
			Address Taxiway Direct Access Conflict(s)	Address Taxiway Three-Node Conflict(s)	Address Taxiway Wide Expanse of Pavement(s)	Address RSA Design Standards
Commercial Service						
Alamosa	San Luis Valley Regional	ALS	✓			
Aspen	Aspen-Pitkin County	ASE	✓		✓	✓
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓	
Cortez	Cortez Municipal	CEZ	✓		✓	
Denver	Denver International	DEN	✓	✓	✓	
Durango	Durango-La Plata County	DRO	✓		✓	
Eagle	Eagle County Regional	EGE	✓			
Grand Junction	Grand Junction Regional	GJT	✓		✓	
Gunnison	Gunnison-Crested Butte Regional	GUC	✓			✓
Hayden	Yampa Valley	HDN	✓			
Fort Collins/Loveland	Northern Colorado Regional	FNL		✓	✓	✓
Montrose	Montrose Regional	MTJ	✓			
Pueblo	Pueblo Memorial	PUB	✓			
Telluride	Telluride Regional	TEX	✓			✓
GA-National						
Denver	Centennial	APA	✓		✓	
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	✓	
GA-Regional						
Colorado Springs	Meadow Lake	FLY	✓			
Denver	Colorado Air and Space Port	CFO	✓		✓	
Greeley	Greeley-Weld County	GXY	✓		✓	

Associated City	Airport Name	FAA ID	Actions to Meet Future Performance Targets			
			Address Taxiway Direct Access Conflict(s)	Address Taxiway Three-Node Conflict(s)	Address Taxiway Wide Expanse of Pavement(s)	Address RSA Design Standards
Longmont	Vance Brand	LMO	✓			
Rifle	Rifle Garfield County	RIL				✓
GA-Local						
Boulder	Boulder Municipal	BDU	✓			✓
Buena Vista	Central Colorado Regional	AEJ	✓			
Burlington	Kit Carson County	ITR	✓			
Canon City	Fremont County	1V6	✓			
Craig	Craig-Moffat	CAG	✓			✓
Delta	Blake Field	AJZ	✓			
Erie	Erie Municipal	EIK	✓			✓
Fort Morgan	Fort Morgan Municipal	FMM				✓
Kremmling	Mc Elroy Airfield	20V	✓			
La Junta	La Junta Municipal	LHX	✓		✓	
Lamar	Lamar Municipal	LAA	✓			
Limon	Limon Municipal	LIC	✓			
Pagosa Springs	Stevens Field	PSO	✓			✓
Salida	Harriet Alexander Field	ANK	✓		✓	
Steamboat Springs	Steamboat Springs	SBS	✓			
Sterling	Sterling Municipal	STK	✓			
Walsenburg	Spanish Peaks Airfield	4V1	✓		✓	
GA-Community						
Akron	Colorado Plains Regional	AKO	✓			
Granby	Granby-Grand County	GNB	✓			
Leadville	Lake County	LXV	✓			
Nucla	Hopkins Field	AIB	✓		✓	✓

Associated City	Airport Name	FAA ID	Actions to Meet Future Performance Targets			
			Address Taxiway Direct Access Conflict(s)	Address Taxiway Three-Node Conflict(s)	Address Taxiway Wide Expanse of Pavement(s)	Address RSA Design Standards
Rangely	Rangely	4V0	✓			
Trinidad	Perry Stokes	TAD	✓			
Wray	Wray Municipal	2V5	✓			
Yuma	Yuma Municipal	2V6	✓			

Note: GA-Rural airports were not included in the table as there are no NPIAS airports in this classification.

Sources: Individual airport ALPs; Google Earth; Kimley-Horn, 2019

8.1.2. Access and Mobility

Access and mobility PMs in this section focus on providing adequate infrastructure to meet the needs of Colorado's diverse airport users. The goal promotes the mobility of pilots across the state and increases the number of airports they are able to utilize, as well as the general population. The PMs under the access and mobility goal are listed below:

Access and Mobility

1. Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building
2. Percent of Population Within a 30-Minute Drive Time of an All-Weather Runway
3. Percent of Airports with Adequate Terminal Capacity
4. Percent of Airports with Adequate Transient Hangar Spaces

8.1.2.1. Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building

The existence and utilization of a dedicated snow removal equipment (SRE) building extends the useful life of this equipment and protects the airport's (as well as potentially FAA and CDOT Division of Aeronautics) investment in the long-term. Properly maintained SRE allows airports to remain operational during less-than-ideal snow, slush, or ice conditions. To note, performance targets for the dedicated SRE building PM are based on airports meeting their facility and service objectives. The facility and service objectives for dedicated SRE buildings are as follows:

- **Commercial Service**: Have dedicated SRE building
- **GA-National**: Have dedicated SRE building
- **GA-Regional**: Have dedicated SRE building
- **GA-Local**: Have dedicated SRE building
- **GA-Community**: Based on community need
- **GA-Rural**: Based on community need

Using this method, the dedicated SRE building 2018 performance and future performance targets are shown in **Table 8.9.**

Table 8.9. Percent of Airports by Classification that have a Dedicated SRE Building – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	64%	100%
GA-National (2)	50%	100%
GA-Regional (5)	60%	100%
GA-Local (19)	53%	100%
GA-Community (16)	38%	No Target Established
GA-Rural (10)	0%	No Target Established
System-wide (66)	**44%**	**61%**

Source: 2018 Inventory & Data Form; Kimley-Horn, 2020

Dedicated SRE building targets for Commercial Service through GA-Local airports is 100 percent. Since GA-Community and GA-Rural airports' facility and service objective is "based on community need," no target has been established. Due to this, the system-wide future performance target is established at 61 percent.

Airports that are deficient in meeting the PM because they do not have a dedicated SRE building are organized by airport classification in **Table 8.10**.

Table 8.10. Airports by Classification with Dedicated SRE Building Needs

Associated City	Airport Name	FAA ID	Action to Meet Future Performance Needs a Dedicated SRE Building
Commercial Service			
Alamosa	San Luis Valley Regional	ALS	✓
Grand Junction	Grand Junction Regional	GJT	✓
Montrose	Montrose Regional	MTJ	✓
Pueblo	Pueblo Memorial	PUB	✓
Telluride	Telluride Regional	TEX	✓
GA-National			
Denver	Rocky Mountain Metropolitan	BJC	✓
GA-Regional			
Colorado Springs	Meadow Lake	FLY	✓
Longmont	Vance Brand	LMO	✓
GA-Local			
Boulder	Boulder Municipal	BDU	✓
Craig	Craig-Moffat	CAG	✓
Del Norte	Astronaut Kent Rominger	RCV	✓
Delta	Blake Field	AJZ	✓
Erie	Erie Municipal	EIK	✓
Fort Morgan	Fort Morgan Municipal	FMM	✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓
La Junta	La Junta Municipal	LHX	✓
Sterling	Sterling Municipal	STK	✓

Source: 2018 Inventory & Data Form

To improve overall system performance and meet future performance targets, airports may need to identify existing facilities to convert into a dedicated SRE building or construct a completely new building for these purposes.

8.1.2.2. Percent of Population Within a 30-Minute Drive Time of an All-Weather Runway

Colorado's winter environments can cause less than ideal weather conditions for flying and getting to and from the airports by ground. The presence of an all-weather runway is integral to emergency landings or traveling to areas with limited access due to snow or icy conditions by ground transportation. To set a target for percent of population within a 30-minute drive time of an all-weather runway, the analysis first needs to identify the number of airports in 2018 with an all-weather runway. To have an all-weather runway, the airport must have a paved runway, have instrument approach capability, and have weather reporting.

Facility and service objectives were established for approach and weather reporting capability; however, no objective was established related to a paved runway. To note, GA-Rural airport facility and service objectives do not align with the criteria for an all-weather runway. The facility and service objectives for an all-weather runway are as follows:

- **Commercial Service**: Precision approach; on-site ASOS or AWOS
- **GA-National**: Precision approach; on-site ASOS or AWOS
- **GA-Regional**: Non-precision with vertical guidance approach; on-site ASOS or AWOS
- **GA-Local**: Non-precision approach; on-site ASOS, AWOS, or Automated Unicom
- **GA-Community**: Non-precision approach; on-site ASOS, AWOS, or Automated Unicom
- **GA-Rural**: Maintain existing approach; non-certified weather reporting

Table 8.11 displays the 2018 performance and future performance target for percent of Colorado population within a 30-minute drive time of an airport with an all-weather runway.

Table 8.11. Percent of Population within a 30-Minute Drive Time of an All-Weather Runway – 2018 Performance/Future Performance Target

Airport Classification	2018 Performance	Future Performance Target
System-wide (56)	**83%**	**85%**

Sources: 2018 Inventory & Data Form; Form 5010 Master Record; Kimley-Horn, 2020

The 2018 performance for percent of population within a 30-minute drive time of an airport with an all-weather runway is 83 percent. If all 56 CASP airports met their facility and service objectives for approach and weather reporting capability, population coverage would increase by two percent. **Table 8.12** shows the 13 airports that need approach and/or weather reporting capability improvements to meet all-weather runway criteria.

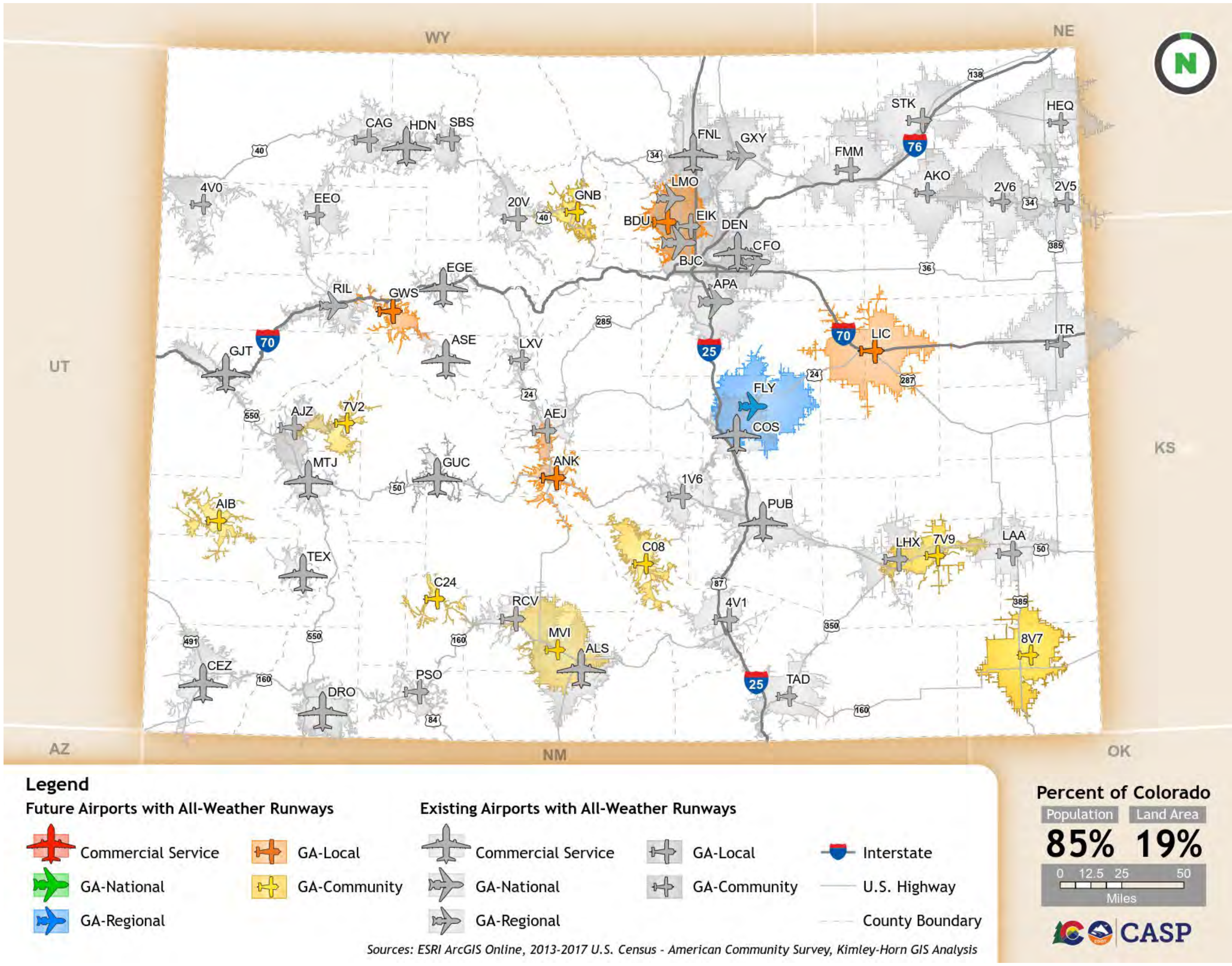
Table 8.12. Airports by Classification That Do Not Meet All-Weather Runway Criteria

Associated City	Airport Name	FAA ID	Actions to Meet Future Performance Targets	
			Needs Instrument Approach	Weather Reporting
GA-Regional				
Colorado Springs	Meadow Lake	FLY	✓	
GA- Local				
Boulder	Boulder Municipal	BDU	✓	
Glenwood Springs	Glenwood Springs Municipal	GWS	✓	
Limon	Limon Municipal	LIC	✓	
Salida	Harriet Alexander Field	ANK	✓	
Steamboat Springs	Steamboat Springs	SBS	✓	
GA-Community				
Creede	Mineral County Memorial	C24	✓	✓
Granby	Granby-Grand County	GNB	✓	
Las Animas	Las Animas-Bent County	7V9	✓	✓
Monte Vista	Monte Vista Municipal	MVI		✓
Nucla	Hopkins Field	AIB	✓	
Paonia	North Fork Valley	7V2	✓	✓
Westcliffe	Silver West	C08	✓	✓

Source: 2018 Inventory and Data Form

Seventy-five to 90 percent population coverage is a typical goal in a state system plan for population coverage related to an all-weather runway. **Figure 8.4** illustrates the additional population coverage that would be gained if the airports listed in **Table 8.12** met their approach and/or weather reporting facility and service objectives.

Figure 8.4. Percent of Population within a 30-Minute Drive Time of an Airport Meeting Future Performance Targets for an All-Weather Runway



8.1.2.3. Percent of Airports with Adequate Terminal Capacity

Terminal capacity at CASP airports was measured individually for Commercial Service and GA airports. Terminal capacity future performance targets for Commercial Service and GA airports are presented in the following sections.

Commercial Service Terminal Capacity Needs

Future performance targets for Commercial Service airports are set at 100 percent as all Commercial Service airports should have adequate terminal capacity to accommodate passenger demand. 2018 performance and future performance targets for commercial service terminals are shown in **Table 8.13**.

Table 8.13. Percent of Commercial Service Airports by Classification with Adequate Terminal Capacity - 2018 Performance/Future Performance Target

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	**29%**	**100%**

Sources: ACRP Report 113; ACRP Report 79; 2018 Inventory & Data Form; Kimley-Horn, 2020

Airports which are deficient in meeting terminal capacity recommendations should work with FAA or CDOT Division of Aeronautics to facilitate more in-depth analyses to identify terminal projects appropriate to their needs and feasibility. **Table 8.14** documents the Commercial Service airports with terminal expansion needs to meet the future performance target.

Table 8.14. Commercial Service Terminal Size Needs

Associated City	Airport Name	FAA ID	Terminal Expansion Needs
Alamosa	San Luis Valley Regional	ALS	✓
Aspen	Aspen-Pitkin County	ASE	✓
Cortez	Cortez Municipal	CEZ	✓
Durango	Durango-La Plata County	DRO	✓
Grand Junction	Grand Junction Regional	GJT	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓
Hayden	Yampa Valley	HDN	✓
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓
Montrose	Montrose Regional	MTJ	✓
Pueblo	Pueblo Memorial	PUB	✓

Sources: 2018 Inventory and Data Form; ACRP Report 25, 2010; Kimley-Horn, 2020

GA Terminal Capacity Needs

All GA terminals, regardless of airport classification, should be large enough to accommodate demand and therefore performance targets were set at 100 percent system-wide. **Table 8.15** displays the 2018 performance and future performance targets for GA terminal buildings.

Table 8.15. Percent of Airports by Classification with Adequate GA Terminal Capacity – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	72%	100%
GA-National (2)	100%	100%
GA-Regional (5)	40%	100%
GA-Local (19)	79%	100%
GA-Community (16)	50%	100%
GA-Rural (10)	10%	100%
System-wide (66)	**58%**	**100%**

Note: GA terminal capacity is based on 150 square feet per peak hour passengers.
Source: Google Earth; 2018 Inventory & Data Form; Kimley-Horn, 2020

Beyond meeting the demand for 2018 activity, an analysis of GA terminal capacities in comparison to 2038 projected demand was also completed. Refer to **Section 8.3.4.1** for airport-specific GA terminal needs to meet 2038 demand.

8.1.2.4. Percent of Airports with Adequate Transient Hangar Spaces

Provision of adequate transient hangar spaces supports the mobility of pilots travelling through Colorado. To note, future performance targets for the transient hangar space PM were set so that all airports meet their facility and service objectives and therefore, are set at 100 percent for applicable airport classifications. An analysis of potential transient hangar needs using 2038 operational forecasts was completed and is presented in **Section 8.3.4.2** which outlines the specific facility and service objectives for each classification. **Table 8.16** displays the 2018 performance and future system performance targets for the provision of adequate transient hangar space.

Table 8.16. Percent of Airports by Classification with Adequate Transient Hangar Spaces – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	50%	100%
GA-National (2)	0%	100%
GA-Regional (5)	20%	100%
GA-Local (19)	42%	100%
GA-Community (16)	0%	No Target Established
GA-Rural (10)	0%	No Target Established
System-wide (66)	**44%**	**61%**

Source: 2018 Inventory & Data Form, Kimley-Horn, 2020

The 2018 performance for airports with enough hangar space to accommodate transient hangar space is 44 percent across the system. System-wide, future performance targets have been established at 61 percent of airports to align with the CASP facility and service objectives for adequate transient hangar spaces. For all Commercial Service through GA-Local airports, their future performance targets are set at 100 percent, while GA-Community and GA-Rural airports do not have targets established since their facility and service objectives are based on community need. Per the forecast, system-wide growth in based aircraft may impact the airport's abilities to meet the future needs. To review which airports are deficient in meeting their 2018 and projected 2038 transient hangar needs, please see **Section 8.2.4.2 Hangar Space Needs** of this chapter.

8.1.3. Economic Sustainability

Identification of opportunities that diversify and strengthen the system's contribution to Colorado's economic health is an important goal to maintain a healthy aviation system. The PMs under the economic sustainability goal are listed below:

Economic Sustainability

1. Percent of Airports with Necessary Fuel Types, Available 24/7
2. Percent of Airports that Support the Aerospace Manufacturing, Technology, and/or Testing Industry
3. Percent of Airports with Adequate Utilities

8.1.3.1. Percent of Airports with Necessary Fuel Type, Available 24/7

Future performance targets for the fuel availability PM were set so that all airports meet their facility and service objectives. Facility and service objectives for fuel are as follows:

- **Commercial Service**: Full service (AvGas & Jet A)
- **GA-National**: Full service (AvGas & Jet A)
- **GA-Regional**: Full service (AvGas & Jet A)
- **GA-Local**: 24/7 self-serve or call out (AvGas & Jet A)
- **GA-Community**: 24/7 self-serve or call out (AvGas); based on community need (Jet A)
- **GA-Rural**: Based on community need (AvGas & Jet A)

For this PM, performance is based on meeting the objectives for both AvGas and Jet A as noted above. 2018 performance and future performance targets for necessary fuel type are shown in **Table 8.17**.

Table 8.17. Percent of Airports by Classification with Necessary Fuel Type, Available 24/7 -2018 Performance/Future Performance Target

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	100%	100%
GA-National (2)	100%	100%
GA-Regional (5)	80%	100%
GA-Local (19)	89%	100%
GA-Community (16)	94%	100%
GA-Rural (10)	100%	No Target Established
System-wide (66)	**94%**	**85%**

Source: 2018 Inventory & Data Form, Kimley-Horn, 2020

System-wide, 94 percent of airports system-wide currently meet the facility and service objectives that match their airport classification. All Commercial Service through GA-Community airports have their future performance targets established at 100 percent which comprises 85 percent of system-wide airports. For future performance targets, 100 percent means the airport should provide the fueling service that corresponds to their facility and service objective. Meeting the necessary fuel types for their classification is critical for access and mobility during emergency situations, long-distance travel, and increasing mobility of pilots.

Airports that are deficient in meeting necessary fuel types that are available 24/7 are organized by airport classification in **Table 8.18**.

Table 8.18. Airports by Classification That Do Not Have Necessary Fuel Type, Available 24/7

Associated City	Airport Name	FAA ID	Action to Meet Future Performance Target
GA-Regional			
Colorado Springs	Meadow Lake	FLY	Install 24/7 Jet A Fuel
GA-Local			
Del Norte	Astronaut Kent Rominger	RCV	Install 24/7 Jet A Fuel
Limon	Limon Municipal	LIC	Install 24/7 Jet A Fuel
GA-Community			
Las Animas	Las Animas-Bent County	7V9	Install 24/7 AvGas Fuel

Source: 2018 Inventory & Data Form

While some types of existing fueling facilities may be eligible for retrofitting credit card readers allowing them to be accessible 24/7, others may require entirely new facilities to be constructed which may prove costly to the airport. Airports not currently meeting but looking to meet their future performance target will need to coordinate with CDOT Division of Aeronautics to review potential available funding resources to install new fueling facilities that are available to pilots 24/7 as FAA grant monies for these types of projects may not be available given the many other needs at airports.

8.1.3.2. Percent of Airports that Support the Aerospace Manufacturing, Technology, and/or Testing Industry

Colorado's naturally ideal environment has contributed to a booming aerospace industry within the state. Supporting this industry at airports strengthens the system's opportunities for economic sustainability. **Table 8.19** summarizes the 2018 performance and future performance targets for airports that support aerospace industries. As shown, future performance targets system-wide are indicated as "no target established" due to CDOT Division of Aeronautics' limited influence on economics/market conditions to attract these industries. The state would support these industries at any airport and would not necessarily advocate for any one airport.

Colorado Air and Space Port (CFO) was certified as a public spaceport in 2018 and is the only licensed launch site in the FAA Northwest Mountain region. CFO plans to serve as the state and the region's hub for commercial space transportation, research, and technological development. CFO is already home to Reaction Engines, a British aerospace manufacturer, which has built a rocket engine testing facility at the airport and is conducting advanced research into hypersonic propulsion solutions.

Table 8.19. Percent of Airports by Classification that Support the Aerospace Manufacturing, Technology, and/or Testing Industry – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	79%	No Target Established
GA-National (2)	100%	No Target Established
GA-Regional (5)	80%	No Target Established
GA-Local (19)	21%	No Target Established
GA-Community (16)	19%	No Target Established
GA-Rural (10)	0%	No Target Established
System-wide (66)	**36%**	**No Target Established**

Source: 2018 Inventory & Data Form, Kimley-Horn, 2020

Airport deficiencies are not reported for this PM as the future performance targets are set as "No Target Established". Due to the nature of the future performance targets, airports cannot be considered meeting or not meeting their target regardless of if they support the aerospace manufacturing, technology, and/or testing industry.

8.1.3.3. Percent of Airports with Adequate Utilities

The presence of utilities located on undeveloped land allows for expedited development of new facilities. **Table 8.20** summarizes the 2018 performance and future performance targets for this PM.

Table 8.20. Percent of Airports by Classification with Adequate Utilities – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	64%	100%
GA-National (2)	100%	100%
GA-Regional (5)	100%	100%
GA-Local (19)	53%	100%
GA-Community (16)	50%	100%
GA-Rural (10)	10%	No Target Established
System-wide (66)	**53%**	**85%**

Source: 2018 Inventory & Data Form, Kimley-Horn, 2020

Future performance targets for the utilities PM are set at 100 percent for all Commercial Service through GA-Community airports which make up 85 percent of system-wide airports. No targets are established for GA-Rural airports due to many having limited opportunities for future facilities development.

Table 8.21 documents the five Commercial Service airports, nine GA-Local Airports, and eight GA-Community airports with additional utility infrastructure needs to meet the future performance targets.

Table 8.21. Airports by Classification with Utility Needs on Undeveloped Land

Associated City	Airport Name	FAA ID	Utility Needs on Undeveloped Land
Commercial Service			
Aspen	Aspen-Pitkin County	ASE	✓
Eagle	Eagle County Regional	EGE	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓
Montrose	Montrose Regional	MTJ	✓
Telluride	Telluride Regional	TEX	✓
GA-Local			
Boulder	Boulder Municipal	BDU	✓
Buena Vista	Central Colorado Regional	AEJ	✓
Craig	Craig-Moffat	CAG	✓
Fort Morgan	Fort Morgan Municipal	FMM	✓
Kremmling	Mc Elroy Airfield	20V	✓
Limon	Limon Municipal	LIC	✓
Pagosa Springs	Stevens Field	PSO	✓
Salida	Harriet Alexander Field	ANK	✓
Steamboat Springs	Steamboat Springs	SBS	✓
GA-Community			
Holyoke	Holyoke	HEQ	✓
Las Animas	Las Animas-Bent County	7V9	✓
Meeker	Meeker/Coulter Field	EEO	✓
Monte Vista	Monte Vista Municipal	MVI	✓
Nucla	Hopkins Field	AIB	✓
Paonia	North Fork Valley	7V2	✓
Westcliffe	Silver West	C08	✓
Yuma	Yuma Municipal	2V6	✓

Source: 2018 Inventory and Data Form; Kimley-Horn, 2020

8.1.4. System Viability Goal

Maintenance and development at airports require substantial investment of resources. Associated PMs focus on protecting investments, increase asset longevity, and promote financial responsibility of airports in the system. The PMs under the system viability goal are listed below:

System Viability

1. Percent of Airports with Certified On-Site Weather Reporting (AWOS or ASOS)
2. Percent of Airports with Pavement Maintenance Programs
3. Percent of Airports with an Average Runway and Taxiway Pavement Condition Index (PCI) of 70 or Greater

8.1.4.1. Percent of Airports with Certified On-Site Weather Reporting (AWOS or ASOS)

On-site weather reporting systems detect and relay weather elements such as visibility, wind speed and direction, precipitation, fog, etc. to pilots and are critical to safe navigation and touchdown, especially during inclement weather. Future performance targets for the certified on-site weather reporting PM were set so that all airports with ASOS/AWOS weather reporting facility objectives would report to the National Airspace Data Interchange Network (NADIN)[1]. Facility and service objectives for weather reporting are as follows:

- **Commercial Service**: On-site ASOS or AWOS
- **GA-National**: On-site ASOS or AWOS
- **GA-Regional**: On-site ASOS or AWOS
- **GA-Local**: On-site ASOS, AWOS
- **GA-Community**: On-site ASOS, AWOS[2]
- **GA-Rural**: Non-certified weather

Table 8.22 displays the 2018 performance and future performance targets developed for the system to have certified on-site weather reporting to NADIN.

Table 8.22. Percent of Airports by Classification with Certified On-Site Weather Reporting (AWOS or ASOS) – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	100%	100%
GA-National (2)	100%	100%
GA-Regional (5)	100%	100%
GA-Local (19)	95%	100%
GA-Community (16)	63%	100%
GA-Rural (10)	20%	No Target Established
System-wide (66)	**77%**	**85%**

Source: 2018 Inventory & Data Form, Kimley-Horn, 2020

Future performance targets are set at 100 percent for all Commercial Service through GA-Community airports which comprise 85 percent of the system-wide airports. The facility and service objective for GA-Rural airports is to have non-certified weather, therefore, no target has been established for this classification. Airports that do not have certified, on-site weather reporting are shown by airport classification in **Table 8.23**.

[1] The NADIN is a private FAA data network accessible to only approved users. A "certified" weather reporting station reports to the NADIN.

[2] Automated Unicom was removed from GA-Local and GA-Community targets, even though it is included as facility and service objective, because Automated Unicom's are unable to report to the NADIN.

Table 8.23. Airports by Classification Certified On-Site Weather Reporting Needs

Associated City	Airport Name	FAA ID	Action to Meet Future Performance Target Needs to Report to NADIN
GA-Local			
Glenwood Springs	Glenwood Springs Municipal	GWS	✓
GA-Community			
Creede	Mineral County Memorial	C24	✓
Las Animas	Las Animas-Bent County	7V9	✓
Monte Vista	Monte Vista Municipal	MVI	✓
Paonia	North Fork Valley	7V2	✓
Springfield	Springfield Municipal	8V7	✓
Westcliffe	Silver West	C08	✓

Source: 2018 Inventory & Data Form

It should be noted that Glenwood Springs (GWS) and Springfield Municipal (8V7) and Silver West (C08) currently have automated UNICOM weather-reporting systems which is adequate based on their facility and service objectives. However, automated UNICOM systems do not report to NADIN. To meet future performance targets, airports should install an ASOS or AWOS with NADIN-reporting capability.

8.1.4.2. Percent of Airports with Pavement Maintenance Programs

Implementation of a pavement maintenance program (PMP) increases the useful life of integral pavement areas such as runways, taxiways, and aprons. **Table 8.24** presents the 2018 performance and future performance targets established for this PM.

Table 8.24. Percent of Airports by Classification with Pavement Maintenance Programs – 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	86%	100%
GA-National (2)	100%	100%
GA-Regional (5)	100%	100%
GA-Local (19)	74%	100%
GA-Community (16)	50%	100%
GA-Rural (10) *	10%	70%
System-wide (66)	**64%**	**95%**

**Note: Three GA-Rural airports (30%) do not have paved runways, therefore, the PM does not apply.*

Source: 2018 Inventory & Data Form, Kimley-Horn, 2020

Future performance targets for the pavement maintenance programs were set so that 100 percent of airports with paved primary runways, regardless of classification, would have a PMP. Three GA-Rural airports do not have paved runways and this is reflected in the future performance target of 95 percent system-wide. **Table 8.25** presents airports by classification with PMP needs to meet the future performance target.

Table 8.25. Airports by Classification That Should Adopt a PMP

Associated City	Airport Name	FAA ID	Action to Meet Future Performance Target Adopt Pavement Maintenance Program
Commercial Service			
Cortez	Cortez Municipal	CEZ	✓
Pueblo	Pueblo Memorial	PUB	✓
GA-Local			
Boulder	Boulder Municipal	BDU	✓
Canon City	Fremont County	1V6	✓
Craig	Craig-Moffat	CAG	✓
Erie	Erie Municipal	EIK	✓
La Junta	La Junta Municipal	LHX	✓
GA-Community			
Holyoke	Holyoke	HEQ	✓
Las Animas	Las Animas-Bent County	7V9	✓
Monte Vista	Monte Vista Municipal	MVI	✓
Nucla	Hopkins Field	AIB	✓
Paonia	North Fork Valley	7V2	✓
Springfield	Springfield Municipal	8V7	✓
Wray	Wray Municipal	2V5	✓
Yuma	Yuma Municipal	2V6	✓
GA-Rural			
Brush	Brush Municipal	7V5	✓
Center	Leach	1V8	✓
Eads	Eads Municipal	9V7	✓
Julesburg	Julesburg Municipal	7V8	✓
La Veta	Cuchara Valley	07V	✓
Walden	Walden-Jackson County	33V	✓

Source: 2018 Inventory & Data Form; Kimley-Horn, 2020

To meet future performance targets, airports will need to document and adopt their own PMP.

8.1.4.3. Percent of airports with an Average Runway and/or Taxiway Pavement Condition Index (PCI) of 70 or Greater

The pavement condition index (PCI) rates the conditions of paved runways, taxiways, and aprons on a scale of zero (failed) to 100 (perfect/new). A pavement area with a PCI rating of 70 is considered to be in “satisfactory” condition. Per the FAA’s AC 150/5380-7B, *Airport Pavement Management Program*, the FAA considers rehabilitating pavement once its PCI drops below 70 is four to five times more expensive than preserving it in “good” condition. **Table 8.26** summarizes the 2018 performance and future system performance targets for airports with a combined average PCI rating of 70 or greater for primary runways and/or taxiways.

Table 8.26. Percent of Airports by Classification with an Average Runway and/or Taxiway PCI of 70 or Greater - 2018 Performance/Future Performance Targets

Airport Classification	2018 Performance	Future Performance Target
Commercial Service (14)	43%	100%
GA-National (2)	50%	100%
GA-Regional (5)	80%	100%
GA-Local (19)	68%	100%
GA-Community (16)	44%	100%
GA-Rural (10)*	0%	70%
System-wide (66)	**47%**	**95%**

Note: Three GA-Rural airports (30%) do not have paved runways, therefore, the PM does not apply.
Source: CDOT Division of Aeronautics Pavement Evaluation and Management, 2018; Kimley-Horn, 2020

The future performance targets for the runway/taxiway PCI PM were set so that 100 percent of airports with paved primary runways, regardless of classification, would have an average PCI of 70 or greater. **Table 8.27** documents primary runway and/or taxiway needs at CASP airports. Seven airports are denoted with an asterisk which indicates the airport has not implemented a PMP.

Table 8.27. Airports by Classification with Pavement Maintenance Needs

Associated City	Airport Name	FAA ID	Action to Meet Future Performance Target
			Improve Average Runway and/or Taxiway PCI to 70 or Greater
Commercial Service			
Alamosa	San Luis Valley Regional	ALS	✓
Aspen	Aspen-Pitkin County	ASE	✓
Durango	Durango-La Plata County	DRO	✓
Eagle	Eagle County Regional	EGE	✓
Grand Junction	Grand Junction Regional	GJT	✓
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓
Montrose	Montrose Regional	MTJ	✓
Pueblo	Pueblo Memorial	PUB	✓
GA-National			
Denver	Rocky Mountain Metropolitan	BJC	✓
GA-Regional			
Colorado Springs	Meadow Lake	FLY	✓
GA-Local			
Boulder	Boulder Municipal	BDU	✓

Associated City	Airport Name	FAA ID	Action to Meet Future Performance Target Improve Average Runway and/or Taxiway PCI to 70 or Greater
Buena Vista	Central Colorado Regional	AEJ	✓
Craig*	Craig-Moffat	CAG	✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓
Kremmling	Mc Elroy Airfield	20V	✓
La Junta	La Junta Municipal	LHX	✓
GA-Community			
Akron	Colorado Plains Regional	AKO	✓
Creede	Mineral County Memorial	C24	✓
Holyoke	Holyoke	HEQ	✓
Las Animas*	Las Animas-Bent County	7V9	✓
Leadville	Lake County	LXV	✓
Monte Vista	Monte Vista Municipal	MVI	✓
Paonia	North Fork Valley	7V2	✓
Springfield*	Springfield Municipal	8V7	✓
Westcliffe	Silver West	C08	✓
GA-Rural			
Brush*	Brush Municipal	7V5	✓
Center	Leach	1V8	✓
Eads*	Eads Municipal	9V7	✓
Haxtun	Haxtun Municipal	17V	✓
Julesburg	Julesburg Municipal	7V8	✓
La Veta*	Cuchara Valley	07V	✓
Walden*	Walden-Jackson County	33V	✓

Note: Three GA-Rural airports (30%) do not have paved runways, therefore, the PM does not apply.
Source: CDOT Division of Aeronautics Pavement Evaluation and Management, 2018; Kimley-Horn, 2020

CDOT Division of Aeronautics currently monitors airport pavement surface for runways, taxiways, aprons, and helipads for all system airports across the state through their Pavement Evaluation and Management system. CDOT Division of Aeronautics should continue to monitor these pavement indicators to review airports whose needs are greatest to allocate appropriate funding resources towards pavement improvement projects.

8.1.5. Summary of Future PM Targets

The prior analyses of the existing system's ability to meet future PM targets summarizes the system's needs based on current conditions. To capitalize on the forecast of future demand which may impact certain PMs, additional analysis of future aviation performance was also conducted and is presented in **Section 8.3 Future Aviation Demand Considerations**.

8.2. Facility and Service Objective Needs

As mentioned in previous chapters of the 2020 CASP, facility and service objectives are designed to provide guidance on the minimum level of development that airports should strive to achieve based on their role or function within the system as determined through their classification. The facility and service objectives are not intended to be mandates or requirements, but recommended standards to help guide airports to optimally perform their roles within the system.

Chapter 5. Airport Role and Classification Analysis identified facility and service objectives for each 2020 CASP classification. **Chapter 6. Existing System Performance** and **Appendix B. Airport Report Cards** compared the facilities and services offered at 2020 CASP airports to the objectives established in **Chapter 5.** The deficiencies identified in **Chapter 6**, and more directly as "No's" in Appendix B, result in future (near-term) system needs and are further discussed in **Chapter 10**.

8.3. Future Aviation Demand Considerations

Utilizing data derived from CASP forecasts, aviation demand is projected to continue to grow at airports throughout the system. As aviation activity grows, it is important to consider the potential impacts this growth may have on the system's future performance. This section assesses how different components of forecasted aviation activity may influence the form and function of future CASP airport needs.

8.3.1. Airport Reference Code (ARC) Analysis

As defined in FAA Advisory Circular 150/5300-13A, *Airport Design*, the FAA classifies airports by an Airport Reference Code (ARC) which subsequently prescribes the overall planning and design criteria for those airports. The ARC is based on the airport's highest Runway Design Code (RDC), minus the visibility component. The RDC is based on the size and operational characteristics of the most demanding aircraft that generally records at least 500 annual operations at the airport. This is referred to as the airport's critical or design aircraft. Critical or design aircraft can refer to either a specific aircraft model or a grouping of aircraft with similar characteristics considered collectively.

The ARC and RDC classification system is based on groupings of aircraft types relative to their operating performance and geometric characteristics. It is comprised of an alpha-numeric identifier representing the Aircraft Approach Category (AAC) and the Aircraft Design Group (ADG). The AAC reflects the approach speed of the aircraft, and the ADG reflects the aircraft's wingspan and tail height. (The third component of RDC is the approach visibility minimums associated with the type of instrument flight visibility in terms of runway visual range [RVR] or by statute mile.) The ARC components are summarized in **Table 8.28**. It should be noted that both airports and aircraft can be referred to by their ARCs.

Aircraft with approach speeds in categories A and B are typically smaller piston-engine aircraft, whereas C, D, and E are normally larger turboprop or turbine-powered aircraft. Similarly, the wingspan and tail height of small, piston-engine aircraft normally correspond to design group I. Typical aircraft in design group II include a Beechcraft King Air, Cessna Citation, or smaller Gulfstream business jets. Design group III includes larger corporate jets such as the Gulfstream G500/550 and air carrier aircraft such as the DeHavilland Dash-8 and Boeing B-737. Design group IV and V represent larger narrow- and wide- body air carrier aircraft such as the Boeing B-757 and B-747, respectively. Group VI includes the largest aircraft, such as an Airbus A-380 or a C-5 military transport aircraft.

Table 8.28. FAA Aircraft Categories and Design Standards

AAC		ADG		
Category	**Approach Speed (knots)**	**Group**	**Wingspan (feet)**	**Tail Height (feet)**
A	Less than 91	I	Less than 49	Less than 20
B	91 to 120	II	49 to 78	21 to 29
C	121 to 140	III	79 to 117	30 to 44
D	141 to 165	IV	118 to 170	45 to 59
E	166 or Greater	V	171 to 213	60 to 65
		VI	214 up to but less than 262	66 up to but less than 80

Source: FAA Advisory Circular 150/5300, Change 1, Airport Design

CASP ARCs compiled during the inventory effort were compared to the AACs and ADGs of the most demanding aircraft regularly operating at each airport for identifying potential future design standard concerns. Ideally, the airport's ARC should generally match the critical aircraft's AAC and ADG combination.

Operations data for each airport was pulled from the FAA's Traffic Flow Management System Counts (TFMSC) for operations conducted between July 2018 through July 2019. TFMSC data includes information such as operations by aircraft type (turboprop, piston, and jet), AAC, and ADG. The airports' current ARC designations were compared to results of the TFMSC data analysis to determine if current ARCs match the AAC and ADG of the most demanding, regularly-operating aircraft. Aircraft with a maximum takeoff weight (MTOW) of 12,500 pounds (lbs.) or more that performed more than 500 operations at an airport were also identified in the analysis. Aircraft with a MTOW of 12,500 lbs. or greater are considered "large aircraft" and are subject to additional design standard considerations.

Table 8.29 presents each airport's current ARC designation, the most common aircraft ARC experienced at each airport, and the largest aircraft that conducted more than 500 operations with a MTOW of 12,500 lbs. or greater. Airports that did not have TFMSC data available are denoted with "N/A" in the "Most Common ARC" column. Blank entries in the table represent airports that did not meet the criteria established in the column header. For the analysis, airports whose ARCs are lower than the most demanding aircraft's AAC and/or ADG are highlighted in red.

Table 8.29. ARC Analysis for System Airports

Associated City	Airport Name	FAA ID	Current ARC Designation	Most Common Aircraft ARC	Largest Aircraft ARC with Over 500 Operations and MTOW ≥12,500 lbs.
Commercial Service					
Alamosa	San Luis Valley Regional	ALS	C-II	B-I	
Aspen	Aspen-Pitkin County	ASE	D-III	B-II	D-II
Colorado Springs	Colorado Springs Municipal	COS	C-IV	B-II	D-III
Cortez	Cortez Municipal	CEZ	B-II	A-II	
Denver	Denver International	DEN	D-V	C-III	D-V
Durango	Durango-La Plata County	DRO	D-IV	B-II	C-III
Eagle	Eagle County Regional	EGE	D-IV	B-II	C-III
Fort Collins/Loveland	Northern Colorado Regional	FNL	C-III	B-II	C-II
Grand Junction	Grand Junction Regional	GJT	D-III	B-II	C-III
Gunnison	Gunnison-Crested Butte Regional	GUC	C-IV	B-II	C-II
Hayden	Yampa Valley	HDN	C-IV	B-II	C-II
Montrose	Montrose Regional	MTJ	D-IV	B-II	C-III
Pueblo	Pueblo Memorial	PUB	C-III	B-II	C-II
Telluride	Telluride Regional	TEX	C-III	B-II	B-II
GA-National					
Denver	Centennial	APA	D-III	B-II	D-II
Denver	Rocky Mountain Metropolitan	BJC	C-II	B-II	C-II
GA-Regional					
Colorado Springs	Meadow Lake	FLY	B-I	A-I	
Denver	Colorado Air and Space Port	CFO	C-II	A-I	
Greeley	Greeley-Weld County	GXY	C-II	A-I	
Longmont	Vance Brand	LMO	B-II	A-I	
Rifle	Rifle Garfield County	RIL	D-II	B-II	C-II

Associated City	Airport Name	FAA ID	Current ARC Designation	Most Common Aircraft ARC	Largest Aircraft ARC with Over 500 Operations and MTOW ≥12,500 lbs.
GA-Local					
Boulder	Boulder Municipal	BDU	B-II	A-I	
Buena Vista	Central Colorado Regional	AEJ	B-II	A-I	
Burlington	Kit Carson County	ITR	B-II	B-I	
Canon City	Fremont County	1V6	B-II	A-I	
Craig	Craig-Moffat	CAG	B-II	A-II	
Del Norte*	Astronaut Kent Rominger	RCV	B-II	N/A	
Delta*	Blake Field	AJZ	B-II	N/A	
Erie	Erie Municipal	EIK	B-I	A-I	
Fort Morgan*	Fort Morgan Municipal	FMM	B-II	N/A	
Glenwood Springs	Glenwood Springs Municipal	GWS	B-II	A-I	
Kremmling	Mc Elroy Airfield	20V	B-II	B-II	
La Junta	La Junta Municipal	LHX	B-II	A-I	
Lamar	Lamar Municipal	LAA	B-II	B-II	
Limon	Limon Municipal	LIC	B-I	A-I	
Pagosa Springs	Stevens Field	PSO	C-II	B-II	B-II
Salida*	Harriet Alexander Field	ANK	B-II	N/A	
Steamboat Springs	Steamboat Springs	SBS	B-II	A-I	
Sterling	Sterling Municipal	STK	B-II	A-I	
Walsenburg	Spanish Peaks Airfield	4V1	B-I	A-I	
GA-Community					
Akron	Colorado Plains Regional	AKO	B-II	A-I	
Creede	Mineral County Memorial	C24	B-I	B-II	
Granby	Granby-Grand County	GNB	B-II	A-I	
Holyoke	Holyoke	HEQ	B-II	B-II	
Las Animas*	Las Animas-Bent County	7V9	B-I	N/A	

Associated City	Airport Name	FAA ID	Current ARC Designation	Most Common Aircraft ARC	Largest Aircraft ARC with Over 500 Operations and MTOW ≥12,500 lbs.
Leadville	Lake County	LXV	B-II	B-II	
Meeker	Meeker/Coulter Field	EEO	B-II	B-II	
Monte Vista	Monte Vista Municipal	MVI	B-I	A-I	
Nucla*	Hopkins Field	AIB	B-II	N/A	
Paonia	North Fork Valley	7V2	A-I	A-II	
Rangely	Rangely	4V0	B-II	A-I	
Springfield	Springfield Municipal	8V7	B-I	A-I	
Trinidad	Perry Stokes	TAD	B-II	A-I	
Westcliffe	Silver West	C08	B-I	A-I	
Wray	Wray Municipal	2V5	B-II	A-I	
Yuma	Yuma Municipal	2V6	B-II	A-I	
GA-Rural					
Blanca	Blanca	05V	A-I	A-I	
Brush	Brush Municipal	7V5	B-I	B-I	
Center	Leach	1V8	A-I	A-I	
Eads	Eads Municipal	9V7	A-I	A-I	
Holly*	Holly	K08	A-I	N/A	
Haxtun	Haxtun Municipal	17V	A-I	B-II	
Julesburg	Julesburg Municipal	7V8	B-I	A-I	
La Veta	Cuchara Valley	07V	A-I	A-I	
Saguache*	Saguache Municipal	04V	A-I	N/A	
Walden	Walden-Jackson County	33V	B-II	B-II	

**Note: Airport did not have TFMSC data between July 2018 and July 2019*

Sources: TFMSC Reports, retrieved September 6, 2019; 2018 Inventory & Data Form; Kimley-Horn, 2020

Based on this evaluation, Colorado Springs (COS), Mineral County Memorial (C24), Haxtun Municipal (17V), and North Fork Valley (4V0) experience 500 or more operations of aircraft with an AAC and/or ADG that is greater than the current airport ARC.

Eighteen airports had aircraft within a single ARC that conducted more than 500 operations with a MTOW or 12,500 lbs. or more. Of these, two have a current airport ARC designation that matches the aircraft within a single ARC that meet the criteria and 15 that have airport ARC designations considered higher than the aircraft within a single ARC that meet the criteria.

One airport, COS had a current ARC designation (C-IV) considered lower than the most demanding aircraft within a single ARC (D-III) for their airport. COS should evaluate the ARC through a master planning or airport layout plan (ALP) update to determine if the primary runway's RDC should change and ascertain the impact to the airport's geometry to meet design standards.[3]

8.3.2. Airfield Capacity Analysis

Determining the airfield capacity of an airport lends insight to the number of operations an airport can handle based on the design, airside facilities, types of aircraft served, average weather conditions, etc. without incurring substantial delay to the operators. Annual service volume (ASV) is a planning estimate of the maximum number of annual operations that an airport can reasonably accommodate in a year. An ASV analysis is a high-level tool that provides a starting point for determining potential capacity needs that require further study. The ASVs for each airport were calculated in **Chapter 6. Existing System Performance** to identify potential airfield capacity issues in comparison to 2018 FAA-reported operations.

Per FAA Order 5090.5, *Formulation of NPIAS and ACIP*, the FAA recommends that planning for developments to increase capacity should be initiated once annual operations reach 60 percent of an airport's ASV. Airports with annual operations at or above this threshold may begin to experience operational delays and airfield congestion. Airports should initiate capacity improvement construction once the airport's ASV exceeds the 80 percent threshold.

The total operations for 2018 and 2038 from **Chapter 7. Aviation Demand Forecasts** were used in conjunction with the previously developed ASVs to identify current and potential future capacity issues. **Table 8.30** demonstrates the 2018 and 2038 operations for each airport compared to their calculated 2018 ASVs. Airports whose annual operations are between 60 and 79 percent of their ASV are highlighted in orange. Airports whose annual operations are at or above 80 percent of their ASV are highlighted in red.

[3] City of Colorado Springs. *Colorado Springs Airport Master Plan Update.* 2013. Available online at https://coloradosprings.gov/flycos/cos-airport-master-plan-update

Table 8.30. 2020 CASP ASVs Based on 2018 and 2038 Operational Demand

Associated City	Airport Name	FAA ID	Annual Service Volume (ASV)	CASP 2018 Operations	CASP 2018 Operations % of ASV	CASP 2038 Operations	CASP 2038 Operations % of ASV
Commercial Service							
Alamosa	San Luis Valley Regional	ALS	156,400	5,718	3.7%	7,419	4.7%
Aspen	Aspen-Pitkin County	ASE	151,000	42,222	28.0%	62,154	41.2%
Colorado Springs	Colorado Springs Municipal	COS	340,000	137,273	40.4%	193,703	57.0%
Cortez	Cortez Municipal	CEZ	154,000	9,834	6.4%	10,540	6.8%
Denver	Denver International	DEN	730,500	594,522	81.4%	901,772	123.4%
Durango	Durango-La Plata County	DRO	195,000	30,190	15.5%	47,450	24.3%
Eagle	Eagle County Regional	EGE	166,700	40,419	24.2%	60,582	36.3%
Fort Collins/ Loveland	Northern Colorado Regional	FNL	170,700	96,008	56.2%	152,004	89.0%
Grand Junction	Grand Junction Regional	GJT	200,000	46,317	23.2%	71,454	35.7%
Gunnison	Gunnison-Crested Butte Regional	GUC	122,000	6,929	5.7%	10,599	8.7%
Hayden	Yampa Valley	HDN	140,300	14,323	10.2%	19,615	14.0%
Montrose	Montrose Regional	MTJ	215,000	30,925	14.4%	50,277	23.4%
Pueblo	Pueblo Memorial	PUB	378,000	196,074	51.9%	210,004	55.6%
Telluride	Telluride Regional	TEX	137,700	9,402	6.8%	15,089	11.0%
GA-National							
Denver	Centennial	APA	525,000	340,721	64.9%	588,093	112.0%
Denver	Rocky Mountain Metropolitan	BJC	285,000	171,262	60.1%	243,039	85.3%
GA-Regional							
Colorado Springs	Meadow Lake	FLY	230,000	65,814	28.6%	66,743	29.0%
Denver	Colorado Air and Space Port	CFO	270,000	79,704	29.5%	112,757	41.8%
Greeley	Greeley-Weld County	GXY	260,000	123,721	47.6%	176,552	67.9%
Longmont	Vance Brand	LMO	230,000	72,939	31.7%	78,966	34.3%

Associated City	Airport Name	FAA ID	Annual Service Volume (ASV)	CASP 2018 Operations	CASP 2018 Operations % of ASV	CASP 2038 Operations	CASP 2038 Operations % of ASV
Rifle	Rifle Garfield County	RIL	210,000	14,561	6.9%	25,274	12.0%
GA-Local							
Boulder	Boulder Municipal	BDU	152,600	51,358	33.7%	55,627	36.5%
Buena Vista	Central Colorado Regional	AEJ	145,100	10,000	6.9%	10,820	7.5%
Burlington	Kit Carson County	ITR	137,200	8,000	5.8%	8,658	6.3%
Canon City	Fremont County	1V6	138,300	13,778	10.0%	14,792	10.7%
Craig	Craig-Moffat	CAG	137,700	12,000	8.7%	12,997	9.4%
Del Norte	Astronaut Kent Rominger	RCV	122,200	5,475	4.5%	19,496	16.0%
Delta	Blake Field	AJZ	139,600	2,910	2.1%	3,152	2.3%
Erie	Erie Municipal Airport	EIK	141,500	52,000	36.7%	53,050	37.5%
Fort Morgan	Fort Morgan Municipal	FMM	118,700	10,000	8.4%	10,815	9.1%
Glenwood Springs	Glenwood Springs Municipal	GWS	87,900	22,020	25.1%	23,850	27.1%
Kremmling	Mc Elroy Airfield	20V	142,900	1,831	1.3%	1,983	1.4%
La Junta	La Junta Municipal	LHX	97,900	9,258	9.5%	10,002	10.2%
Lamar	Lamar Municipal	LAA	116,500	3,399	2.9%	3,664	3.1%
Limon	Limon Municipal	LIC	102,500	6,000	5.9%	6,120	6.0%
Pagosa Springs	Stevens Field	PSO	162,000	17,053	10.5%	24,043	14.8%
Salida	Harriet Alexander Field	ANK	90,900	4,053	4.5%	4,383	4.8%
Steamboat Springs	Steamboat Springs	SBS	75,900	11,112	14.6%	12,035	15.9%
Sterling	Sterling Municipal	STK	138,100	2,176	1.6%	2,354	1.7%
Walsenburg	Spanish Peaks Airfield	4V1	100,500	5,000	5.0%	5,101	5.1%
GA-Community							
Akron	Colorado Plains Regional	AKO	130,100	20,500	15.8%	22,121	17.0%
Creede	Mineral County Memorial	C24	77,100	1,439	1.9%	1,468	1.9%

Associated City	Airport Name	FAA ID	Annual Service Volume (ASV)	CASP 2018 Operations	CASP 2018 Operations % of ASV	CASP 2038 Operations	CASP 2038 Operations % of ASV
Granby	Granby-Grand County	GNB	230,000	2,600	1.1%	2,816	1.2%
Holyoke	Holyoke	HEQ	139,600	8,500	6.1%	9,206	6.6%
Las Animas	Las Animas-Bent County	7V9	89,000	856	1.0%	873	1.0%
Leadville	Lake County	LXV	136,900	5,000	3.7%	5,249	3.8%
Meeker	Meeker/Coulter Field	EEO	143,000	8,070	5.6%	8,739	6.1%
Monte Vista	Monte Vista Municipal	MVI	111,900	6,000	5.4%	6,121	5.5%
Nucla	Hopkins Field	AIB	103,600	4,220	4.1%	4,563	4.4%
Paonia	North Fork Valley	7V2	89,000	2,000	2.2%	2,040	2.3%
Rangely	Rangely	4V0	153,400	47,115	30.7%	51,030	33.3%
Springfield	Springfield Municipal	8V7	136,100	4,575	3.4%	4,667	3.4%
Trinidad	Perry Stokes	TAD	116,500	5,880	5.0%	6,319	5.4%
Westcliffe	Silver West	C08	79,000	930	1.2%	946	1.2%
Wray	Wray Municipal	2V5	139,600	14,600	10.5%	15,813	11.3%
Yuma	Yuma Municipal	2V6	104,900	5,000	4.8%	5,416	5.2%
GA-Rural							
Blanca	Blanca	05V	74,400	1,000	1.3%	1,020	1.4%
Brush	Brush Municipal	7V5	74,400	1,461	2.0%	1,490	2.0%
Center	Leach	1V8	74,400	833	1.1%	850	1.1%
Eads	Eads Municipal	9V7	74,400	728	1.0%	742	1.0%
Haxtun	Haxtun Municipal	17V	117,300	90	0.1%	92	0.1%
Holly	Holly	K08	87,900	1,085	1.2%	1,107	1.3%
Julesburg	Julesburg Municipal	7V8	89,000	312	0.4%	318	0.4%
La Veta	Cuchara Valley	07V	102,500	50	0.0%	50	0.0%
Saguache	Saguache Municipal	04V	74,400	72	0.0%	73	0.0%
Walden	Walden-Jackson County	33V	105,400	1,103	1.0%	1,194	1.1%

Sources: FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2020

By 2038, Greeley-Weld County (GXY) is projected to exceed the planning threshold for capacity and in the same timeframe, four airports (DEN, FNL, APA, and BJC) are anticipated to exceed the 80 percent capacity improvement construction threshold. Pueblo Memorial (PUB) and COS are anticipated to have annual operations within 10 percent of reaching the 60 percent ASV planning threshold in 2038.

8.3.2.1. Sensitivity Analysis

Aviation activity is anticipated to grow over the next 20 years according to the findings in **Chapter 7. Aviation Demand Forecasts**. Since a large portion of the growth is anticipated at the airports who already experience some of the highest activity levels, a high-level examination of airports with at least 75,000 annual operations was performed to determine the impact on these airports. **Table 8.31** displays the airports with annual operations exceeding 75,000 in 2018 and/or projected to exceed 75,000 operations in 2038.

Table 8.31. Airports with Over 75,000 Annual Operations in 2018 or Projected by 2038

Associated City	Airport Name	FAA ID	Historical	Projected
			CASP 2018 Operations	CASP 2038 Operations
Commercial Service				
Colorado Springs	Colorado Springs Municipal	COS	137,273	193,703
Denver	Denver International	DEN	594,522	901,772
Fort Collins/ Loveland	Northern Colorado Regional	FNL	96,008	152,004
Pueblo	Pueblo Memorial	PUB	196,074	210,004
General Aviation				
Denver	Centennial	APA	340,721	588,093
Denver	Colorado Air and Space Port	CFO	79,704	112,757
Denver	Rocky Mountain Metropolitan	BJC	171,262	243,039
Greeley	Greeley-Weld County	GXY	123,721	176,552
Longmont	Vance Brand	LMO	72,939	78,966

Sources: FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2020

According to the FAA, delays cost airlines and passengers billions of dollars annually. For each hour of delay, the cost to the airline is estimated to be between $1,400 to $4,500 and between $35 to $63 to the passenger[4]. Currently, there are eight airports in Colorado's aviation system that conducted over 75,000 annual operations in 2018. In addition, according to the findings derived from **Chapter 7. Aviation Demand Forecasts**, Vance Brand (LMO) is projected to have annual operations that will exceed 75,000 in 2038.

Five airports (APA, BJC, DEN, FNL, and GXY) were identified as having total annual operations that may exceed the 60 percent threshold for ASV by 2038. With three of these airports in the Denver metropolitan area, it appears that a regional look at operational capacity needs would be helpful in determining more precisely the type of capacity concerns and what options might be available to

[4] FAA "Fact Sheet – Facts about the FAA and Air Traffic Control", August 20, 2019

address capacity constraints within the region. Beyond the regional evaluation, CDOT Division of Aeronautics should consider working with all the airports with identified potential capacity concerns to undertake a more in-depth study of demand/capacity to determine more closely the steps each airport needs to take for capacity improvements.

8.3.3. Future NPIAS and ASSET Evaluation

This section evaluates potential changes to the National Plan of Integrated Airport Systems (NPIAS) and the general aviation (GA) ASSET classifications for airports in the Colorado aviation system. As previously discussed in **Chapter 5. Airport Role and Classification Analysis**, 49 Colorado system airports have been included in the NPIAS as part of the FAA's latest publication, *The Report to Congress, NPIAS 2019-2023 (2019-2023 NPIAS).* Although NPIAS airports are assumed to continue to meet eligibility requirements through the planning horizon, this section analyzes potential changes in NPIAS status and ASSET classification for CASP airports based upon the 2038 forecasts established in Chapter 7**.**

8.3.3.1. Eligibility Criteria for NPIAS Airports

The FAA has established a set of criteria to determine if the facility is eligible for entry into the NPIAS through FAA Order 5090.5, *Formulation of the NPIAS and ACIP,* which cancels FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)* and FAA Order 5100.39A, *Airports Capital Improvement Plan.* FAA Order 5090.5 brings about key updates to eligibility requirements for airports requesting entry into, or withdrawal from, the NPIAS and defines a GA airport as "a public-use airport that is located in a state and that, as determined by the Secretary, does not have scheduled service or has scheduled service with less than 2,500 passenger boardings each year" which was not included in previous Orders. Additionally, FAA Order 5090.5 includes revisions to the National Priority System (NPS) equation, which determines the prioritization of airport development, to include the airport's role in the national airport system[5].

Airports are divided into two separate categories: Commercial Service and GA. Eligibility criteria differs for each category and are presented below:

An **existing Commercial Service** airport must meet the following criteria:

- Publicly-owned, publicly accessible airport that receives scheduled air carrier service and annually enplanes 2,500 or more passengers

An **existing GA** airport must meet the following criteria:

- Operated by a sponsor eligible to receive federal funds and meet [grant] obligations
- Used by 10 or more operational and airworthy aircraft based at the airport. The aircraft tail numbers must be provided and validated against the FAA Aircraft Registry.
- Located at least 30 miles from the nearest NPIAS airport. The 30-mile calculation must consider all existing NPIAS airports within a 30-mile radius, even if it is in an adjacent state.

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[5] FAA (September 3, 2019). Order 5090.5, *Formulation of the NPIAS and the ACIP*. Available online at https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentNumber/5090.5 (accessed December 2019)

- Demonstrates an identifiable role in the national system (such as Basic, Local, Regional, or National)
- Included in a state or territory aviation system plan with a role similar to the federal role, and recommended by the airport's state or territory aviation authority to be part of the NPIAS
- A review by the FAA finds no significant airfield design standard deficiencies, compliance violations, or wetland or wildlife issues

An existing **publicly-owned, public-use heliport** may be considered for inclusion if it is deemed to provide a significant contribution to public transportation and meets the following criteria:

- Operated by a sponsor eligible to receive federal fund and meet obligations
- Used by four or more operational and airworthy rotorcraft based at the heliport for at least two years prior to this request and 400 annual IFR flights
- Included in the state airport system plan (such as the 2020 CASP)

A **proposed Commercial Service or GA airport** must meet the applicable eligibility criteria listed above and meet the following additional requirements:

- Demonstrates how it will meet the operational activity required [for its proposed role] within the first five years of operations through a forecast validated by the FAA (The operational activity cannot be based on attracting demand from other airports, unless there is safety or standard deficiencies at these other airports)
- Provides enhanced facilities that will accommodate the current aviation activity and improve functionality as well as provide room for future development based on imminent justified demand
- Shows a benefit-cost analysis rating of 1.0 or more (Information on when and how to conduct a benefit-cost analysis is in FAA Order 5100.38, *Airport Improvement Program Handbook*, and FAA Airport Benefit-Cost Analysis Guidance)
- Presents a detailed financial plan for the proposed airport to accomplish its construction and ongoing maintenance
- Level of local support/consensus is adequate to achieve the development of the new airport

A proposed GA airport that does not meet all of these criteria may be considered for inclusion using a special justification as listed under the GA airport eligibility requirements above.

In addition to these specific eligibility requirements, FAA Order 5090.5 provides a number of considerations the FAA employs when reviewing NPIAS entry requests. These considerations pertain to the airport's level of financial self-reliance, the airport sponsor's ability and willingness to support the airport, current design standard deficiencies or other potential federal compliance issues (e.g., non-aeronautical activity on airport property), and the airport's role in meeting current and project future aviation demands. Additional details about these factors are available in Table 3.4 of FAA Order 5090.5.

8.3.3.2. NPIAS Evaluation

In reference to **Chapter 5. Airport Role and Classification Analysis**, 49 of the 66 CASP airports met the eligibility requirements for inclusion into the *2019-2023 NPIAS*. These airports were deemed as important to the national airport system and contributed integral aviation services or facilities to the nation's aviation system. Nine of the 49 airports were designated as Primary airports and were then subcategorized into Large, Medium, Small, and Nonhub dependent upon their share of total U.S. enplanements. The remaining 40 airports were designated as Nonprimary and subcategorized into Commercial Service, Reliever, and General Aviation airports.

Due to historical activity and anticipated changes, 14 Colorado system airports were identified as Commercial Service for the purposes of the 2020 CASP. As noted, nine are Primary Commercial Service and five are Nonprimary airports. Nonprimary airports include Nonprimary Commercial Service (those airports with enplanements between 2,500 and 10,000 per year) and Nonprimary General Aviation airports. The Colorado Nonprimary Commercial Service airports include:

- San Luis Valley Regional (ALS)
- Cortez Municipal (CEZ)
- Northern Colorado Regional (FNL)

Other airports with scheduled commercial service but with less than 2,500 annual enplanements are classified as Nonprimary General Aviation. These include PUB and Telluride Regional (TEX). All Nonprimary airports are included in FAA's ASSET with classifications based on meeting the criteria. More information about airport role and classification for the 2020 CASP can be found in Chapter 5. Analysis of potential changes based on 2018 data are summarized below in Section **8.3.3.3**.

In the first ASSET study released in 2012, Colorado was identified as having 38 GA NPIAS airports. In the 2019-2023 NPIAS, the number of NPIAS GA airports increased to 40 due to PUB and FNL's re-classification from Commercial Service to Nonprimary since the first ASSET study. The classifications from the ASSET study and the current 2019-2023 NPIAS report are reflected in **Table 8.32.**

Table 8.32. Colorado Airports ASSET Categories

ASSET Category	ASSET CLASSIFICATION		2020 CASP Airport Examples
	A National ASSET (2012) Study	*2019-2023 NPIAS* Report	
National	2	2	Centennial (APA) Rocky Mountain Metropolitan (BJC)
Regional	2	7	Meadow Lake (FLY) Colorado Air and Space Port (CFO)
Local	27	20	Boulder Municipal (BDU) Blake Field (AJZ)
Basic	7	11	Colorado Plains Regional (AKO) Meeker/Coulter Field (EEO)

Sources: FAA 2019-2023 NPIAS, General Aviation Airports: A National ASSET (2012), Kimley-Horn, 2020

Table 8.33 summarizes the remaining 17 publicly-owned, non-NPIAS airports and their ability to meet the NPIAS eligibility criteria based on 2018 aviation activity data. Airports that have checkmarks meet the eligibility requirement in the column. The airports highlighted in **green** represent those that meet all of the criteria.

Table 8.33. CASP Non-NPIAS Publicly Owned Airports – NPIAS Eligibility Criteria & Analysis Results

Associated City	Airport Name	FAA ID	Sponsor-Operated	Has at Least 10 Based Aircraft	30+ Miles from NPIAS Airport	Identifiable Role in the NPIAS	Included in the CASP
Blanca	Blanca	05V	✓			✓	✓
Brush	Brush Municipal	7V5	✓			✓	✓
Center	Leach	1V8	✓			✓	✓
Creede	Mineral County Memorial	C24	✓	✓	✓	✓	✓
Del Norte	Astronaut Kent Rominger	RCV	✓	✓		✓	✓
Eads	Eads Municipal	9V7	✓			✓	✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓	✓		✓	✓
Haxtun	Haxtun Municipal	17V	✓			✓	✓
Holly	Holly	K08	✓		✓	✓	✓
Julesburg	Julesburg Municipal	7V8	✓			✓	✓
La Veta	Cuchara Valley	07V	✓			✓	✓
Las Animas	Las Animas-Bent County	7V9	✓	✓		✓	✓
Paonia	North Fork Valley	7V2	✓	✓		✓	✓
Saguache	Saguache Municipal	04V	✓		✓	✓	✓
Springfield	Springfield Municipal	8V7	✓	✓	✓	✓	✓
Walden	Walden-Jackson County	33V	✓		✓	✓	✓
Westcliffe	Silver West	C08	✓	✓	✓	✓	✓

Sources: FAA 2019-2023 NPIAS; Kimley-Horn, 2020

Based on 2018 data used in the Chapter 7 forecasts for aviation activity, two airports appear eligible for consideration for inclusion into future NPIAS reports:

- Mineral County Memorial (C24)
- Springfield Municipal (8V7)

Before moving forward with NPIAS consideration, CDOT Division of Aeronautics would need to work closely with each airport for the public sponsor to understand the implications and needs associated with becoming a NPIAS airport, including the pros and cons, as well as with the FAA.

8.3.3.3. ASSET Evaluation

As part of the 2019-2023 NPIAS update, the FAA reviewed 2016 airport data to evaluate if any changes to ASSET classifications were warranted based on more recent information. Given that the data timeframe is dissimilar to the 2020 CASP, evaluation of potential changes in ASSET categories was conducted to determine if any airports would change categories based on updated airport activity data from 2018.

During this review, six airports were found to have enough airport activity to be re-categorized during the next NPIAS update assuming the activity in 2018 continues to hold into 2019. **Table 8.34** summarizes the airports in Colorado that warrant a potential change in NPIAS and/or ASSET classification based on 2018 airport data. It should be noted that the non-NPIAS airports (Astronaut Kent Rominger [RCV], Glenwood Springs [GWS], Las Animas-Bent County [7V9], and North Fork Valley [7V2]) will not be evaluated and assigned an ASSET classification until such time that they are officially adopted in the NPIAS.

Table 8.34. Potential Changes to CASP Airport ASSET Classifications

Associated City	Airport Name	FAA ID	ASSET Classification	
			2016	2018
Del Norte	Astronaut Kent Rominger	RCV	N/A	Local
Glenwood Springs	Glenwood Springs Municipal	GWS	N/A	Local
Las Animas	Las Animas-Bent County	7V9	N/A	Basic
Paonia	North Fork Valley	7V2	N/A	Local
Pueblo	Pueblo Memorial	PUB	Regional	N/A*
Walsenburg	Spanish Peaks Airfield	4V1	Basic	Local

**Note: PUB had over 10,000 enplanements in 2018 which should qualify the airport for Primary nonhub status and therefore would not have an associated ASSET classification.*

Sources: FAA 2019-2023 NPIAS, General Aviation Airports: A National ASSET (2012), Kimley-Horn, 2020

Per the NPIAS evaluation using 2018 airport data, four airports may be eligible for inclusion in future NPIAS reports and were not previously given an ASSET classification. These airports were evaluated and assigned an ASSET classification pending possible future NPIAS status (see **Table 8.34**). Spanish Peaks Airfield (4V1), a Nonprimary General Aviation airport, was identified as having increased airport activity to warrant a change in ASSET classification from Basic to Local. PUB was noted to have sufficient enplanements in 2018 to warrant moving to Primary airport status, therefore it would no longer have an ASSET classification. It should be noted that ALS, CEZ, and FNL will also remain

Nonprimary Commercial Service and are likely to maintain their ASSET classifications of Local (ALS and CEZ) and Regional (FNL). TEX is anticipated to remain Nonprimary GA with a classification of Local.

8.3.4. Existing and Future Facility Needs

Future facility requirements continue to build upon the forecasts of aviation demand conducted in Chapter 7. This section explores potential facility needs to improve airports' capacities in adequately accommodating future demand as they relate to a number of different CASP PMs and facility and service objectives. Future performance targets for related PMs are detailed in following sections of this chapter. **Tables 8.8** and **Table 8.9** in this section detail only the airports that are not currently meeting 2018 demand and/or 2038 demand based upon their existing facilities. Airports that meet their current and future needs are not shown in the following tables. Additionally, airports whose facility and service objectives are established as "Based on Community Need" are not shown in these tables as they are not considered to be deficient in their facilities towards meeting their objectives.

8.3.4.1. GA Terminal Capacity Needs

Commercial Service and GA terminal facilities were analyzed in **Chapter 6. Existing System Performance** to evaluate the adequacy of passenger terminal sizes and amenities. Existing terminal capacity was analyzed in the PM "Percent of Airports with Adequate Terminal Capacity" and through the 2020 CASP facility and service objectives for terminal facility needs. The terminal needs analyses in Chapter 6 were three-fold:

- Measured terminal capacity specifically at commercial service terminals using high-level, terminal building minimum square footage calculations based on number of gates available in 2018
- Measured GA-specific terminals at all airports using size calculations based on the peak number of passengers
- Measured terminal amenities based on facility and service objectives for all airport classifications (excluding Commercial Service and GA-National airports)[6]

Future terminal needs specific to GA terminal building sizes were examined in this analysis utilizing 2038 forecast data reported in **Chapter 7. Aviation Demand Forecasts**. It should be noted that future commercial service terminal size needs were not estimated because the needs are based on the number of gates available at each airport and future number of gates over the planning horizon are unknown. Commercial Service airports should evaluate future terminal size needs based on the forecasts identified in their master plans. Future GA terminal size requirements were determined using the same methodology employed in Chapter 6, but using 2038 GA operational forecasts for each airport

Table 8.35 documents 2020 CASP airports with GA terminal size needs in 2018 and/or 2038. A blank cell for 2018 indicates the existing GA terminal building is adequately sized based on 2018 demand. Airports without an existing GA terminal building are denoted with an asterisk.

[6] Commercial Service and GA-National airports facility and service objectives were based on an acceptable level of terminal square footage to passenger enplanements and commercial operations rather types of amenities available to the airport user.

Table 8.35. GA Terminal Buildings Size Needs by Classification Based on Forecasted Demand Through 2038

Associated City	Airport Name	FAA ID	2018 Terminal Size Deficiency (Sq. ft.)	2038 Terminal Size Deficiency (Sq. ft.)
Commercial Service				
Fort Collins/Loveland	Northern Colorado Regional	FNL	-9,000	-16,000
Montrose	Montrose Regional	MTJ		-660
Telluride	Telluride Regional	TEX		-400
GA-National				
Denver	Centennial	APA		-12,800
Denver	Rocky Mountain Metropolitan	BJC		-4,900
GA-Regional				
Denver	Colorado Air and Space Port	CFO	-100	-4,300
Greeley	Greeley-Weld County	GXY	-9,400	-16,000
Longmont	Vance Brand	LMO	-7,100	-7,800
GA-Local				
Craig	Craig-Moffat	CAG		-100
Del Norte	Astronaut Kent Rominger*	RCV	-700	-700
Glenwood Springs	Glenwood Springs Municipal*	GWS	-2,800	-3,000
Limon	Limon Municipal	LIC	-200	-300
Pagosa Springs	Stevens Field	PSO	-500	-1,400
GA-Community				
Akron	Colorado Plains Regional	AKO	-900	-1,100
Creede	Mineral County Memorial	C24	-100	-100
Holyoke	Holyoke	HEQ	-600	-700
Las Animas	Las Animas-Bent County*	7V9	-150	-150
Meeker	Meeker/Coulter Field	EEO		-100
Paonia	North Fork Valley*	7V2	-150	-300
Rangely	Rangely	4V0	-3,600	-4,100

Associated City	Airport Name	FAA ID	2018 Terminal Size Deficiency (Sq. ft.)	2038 Terminal Size Deficiency (Sq. ft.)
Wray	Wray Municipal	2V5	-1,300	-1,500
Yuma	Yuma Municipal	2V6	-400	-500
GA-Rural				
Blanca	Blanca*	05V	-100	-100
Brush	Brush Municipal*	7V5	-200	-200
Eads	Eads Municipal*	9V7	-100	-100
Haxtun	Haxtun Municipal*	17V	-100	-100
Holly	Holly*	K08	-100	-100
Julesburg	Julesburg Municipal*	7V8	-100	-100
La Veta	Cuchara Valley*	07V	-100	-100
Saguache	Saguache Municipal*	04V	-100	-100
Walden	Walden-Jackson County*	33V	-100	-100

Note: Terminal building sizes are rounded to the nearest hundred square feet

**Note: Signifies the airport does not have a GA terminal building in 2018*

Sources: FAA TAF, pulled March 2019; 2018 Inventory & Data Form; Kimley-Horn, 2020

8.3.4.2. Hangar Space Needs

Anticipated growth in based aircraft system-wide through 2038 could inherently impact the airports' abilities to provide adequate aircraft storage facilities. Insufficient development of hangars/tie down spaces in response to rising demand could negatively impact multiple system-wide goals and facility and service objectives established in the 2020 CASP. Calculations for 2038 based aircraft and overnight transient hangar space for each airport is based on 2020 CASP facility and service objectives as shown below:

- **Commercial Service:** Hangars for 80% of based aircraft and 50% of weekly average overnight transient storage
- **GA-National:** Hangars for 60% of based aircraft fleet and 50% of weekly overnight transient storage
- **GA-Regional:** Hangars for 60% of based aircraft fleet and 50% of weekly overnight transient storage
- **GA-Local:** Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage
- **GA-Community:** Hangars for 40% of based aircraft fleet
- **GA-Rural:** Based on community need

The healthy projected growth in aviation activity at 2020 CASP airports over the planning period results in the need for additional hangar storage system-wide. Airports should work with CDOT Division of Aeronautics and airports' consultants to preserve land on airport property for additional hangar storage development to keep up with future demand. **Table 8.36** documents 2020 CASP hangar space needs based on 2018 and 2038 demand. A blank cell indicates the number of existing hangar spaces is adequate for 2018 and/or 2038 demand.

Table 8.36. Airports with Adequate Existing Hangar Spaces by Classification for 2018 and 2038 Demand

Associated City	Airport Name	FAA ID	2018 Based Aircraft Hangar Space Deficiency	2018 Transient Hangar Space Deficiency	2038 Based Aircraft Hangar Space Deficiency	2038 Transient Aircraft Hangar Space Deficiency
Commercial Service						
Aspen	Aspen-Pitkin County	ASE	-72	-30	-86	-37
Colorado Springs	Colorado Springs Municipal	COS	-24	-60	-83	-76
Denver	Denver International	DEN		-25		-25
Durango	Durango-La Plata County	DRO		-10		-12
Eagle	Eagle County Regional	EGE			-4	-3
Grand Junction	Grand Junction Regional	GJT			-2	
Gunnison	Gunnison-Crested Butte Regional	GUC	-15	-20	-20	-24
Hayden	Yampa Valley	HDN	-6		-8	
Fort Collins/Loveland	Northern Colorado Regional	FNL		-1	-34	-1
Pueblo	Pueblo Memorial	PUB			-15	
Telluride	Telluride Regional	TEX	-21	-112	-28	-135
GA-National						
Denver	Centennial	APA		-55	-79	-73
Denver	Rocky Mountain Metropolitan	BJC	-56	-138	-109	-166
GA-Regional						
Colorado Springs	Meadow Lake	FLY		-3		-3
Denver	Colorado Air and Space Port	CFO		-8		-9
Greeley	Greeley-Weld County	GXY				
Longmont	Vance Brand	LMO		-4		-5
Rifle	Rifle Garfield County	RIL	-4	-10	-10	-13
GA-Local						
Boulder	Boulder Municipal	BDU		-2		-2
Canon City	Fremont County	1V6		-1		-1
Craig	Craig-Moffat	CAG		-2		-2
Del Norte	Astronaut Kent Rominger	RCV		-1		-1
Erie	Erie Municipal	EIK		-1		-1
Fort Morgan	Fort Morgan Municipal	FMM		-1		-1
Glenwood Springs	Glenwood Springs Municipal	GWS		-1		-1
Kremmling	Mc Elroy Airfield	20V		-1		-1
Pagosa Springs	Stevens Field	PSO		-2		-2
Salida	Harriet Alexander Field	ANK		-1		-1
Steamboat Springs	Steamboat Springs	SBS		-6	-4	-7

Sources: 2018 Inventory & Data Form; Kimley-Horn, 2020

8.3.4.3. Apron Tie-Down Needs

In addition to providing adequate hangar space, apron tie-downs serve as an alternative facility for on-airport aircraft storage. Similar to hangar spaces, the number of apron tie-downs that may be needed in the future would increase as aviation activity increases, specifically growth in based aircraft. Future apron tie-down spaces were determined for each airport using 2038 preferred forecasts for based aircraft. 2038 apron tie-down calculations for each airport are based on CASP facility and service objectives as shown below:

- **Commercial Service:** Tie-downs for 20% of based aircraft fleet and 50% of weekly average overnight transient storage during peak season
- **GA-National:** Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season
- **GA-Regional:** Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season
- **GA-Local:** Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season
- **GA-Community:** Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season
- **GA-Rural:** Tie-downs for 100% of based aircraft fleet

Similar to hangar storage, additional apron tie-downs may be needed at 2020 CASP airports to keep up with forecast demand. Airports should work with CDOT Division of Aeronautics and airports' consultants to preserve future space for apron expansion to keep up with anticipated growing demand. **Table 8.37** documents 2020 CASP apron tie-down needs based on 2018 and 2038 demand. A blank cell indicates the number of existing apron tie-down spaces is adequate for 2018 demand.

Table 8.37. Airports by Classification with Apron Tie-Downs Needs Based on 2018 and 2038 Demand

Associated City	Airport Name	FAA ID	2018 Apron Tie-Down Deficiency	2038 Apron Tie-Down Deficiency
Commercial Service				
Colorado Springs	Colorado Springs Municipal	COS	-82	-112
Denver	Denver International	DEN	-17	-16
Eagle	Eagle County Regional	EGE	-33	-40
Grand Junction	Grand Junction Regional	GJT		-5
Gunnison	Gunnison-Crested Butte Regional	GUC	-2	-7
Fort Collins/Loveland	Northern Colorado Regional	FNL	-8	-19
Montrose	Montrose Regional	MTJ	-7	-12
Pueblo	Pueblo Memorial	PUB	-12	-18
Telluride	Telluride Regional	TEX	-104	-129
GA-National				
Denver	Centennial	APA	-177	-268
Denver	Rocky Mountain Metropolitan	BJC	-28	-91
GA-Regional				
Colorado Springs	Meadow Lake	FLY	-90	-97
Greeley	Greeley-Weld County	GXY	-44	-62
Longmont	Vance Brand	LMO	-76	-88
Rifle	Rifle Garfield County	RIL		-1
GA-Local				
Canon City	Fremont County	1V6		-1
Del Norte	Astronaut Kent Rominger	RCV	-5	-5
Delta	Blake Field	AJZ	-14	-14
Erie	Erie Municipal	EIK	-28	-32
Fort Morgan	Fort Morgan Municipal	FMM	-4	-4
Glenwood Springs	Glenwood Springs Municipal	GWS	-5	-8
Salida	Harriet Alexander Field	ANK		-4

Associated City	Airport Name	FAA ID	2018 Apron Tie-Down Deficiency	2038 Apron Tie-Down Deficiency
Steamboat Springs	Steamboat Springs	SBS	-33	-42
Sterling	Sterling Municipal	STK	-10	-9
GA- Community				
Holyoke	Holyoke	HEQ	-1	-1
Las Animas	Las Animas-Bent County	7V9	-1	-1
Trinidad	Perry Stokes	TAD	-4	-5
Westcliffe	Silver West	C08	-5	-6
Wray	Wray Municipal	2V5	-12	-11
Yuma	Yuma Municipal	2V6	-7	-7
GA-Rural				
Eads	Eads Municipal	9V7	-6	-6
Julesburg	Julesburg Municipal	7V8	-4	-4

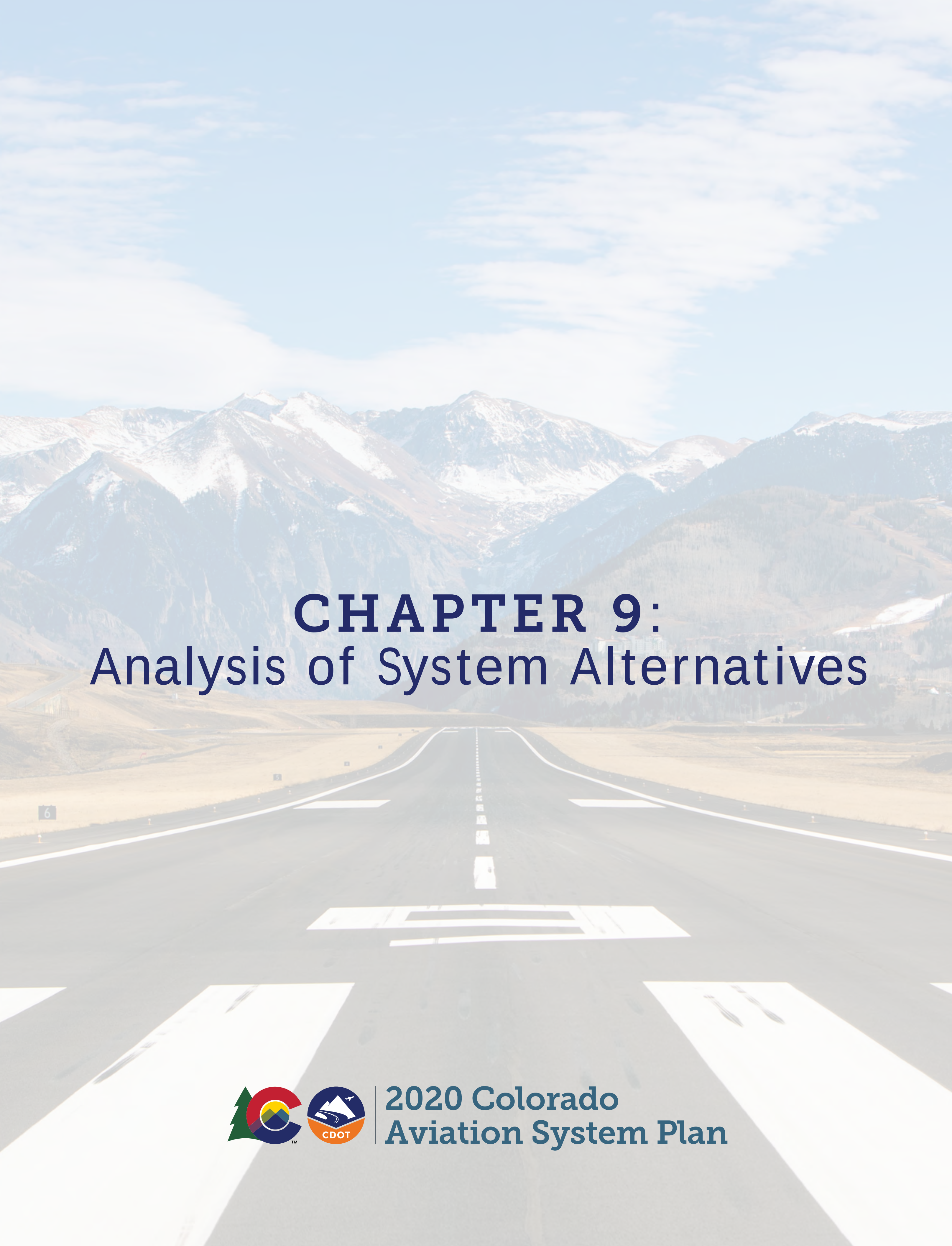
Sources: 2018 Inventory & Data Form; Kimley-Horn, 2020

8.3.5. Summary of Factors Influencing Future System Performance

Projected growth in activity over the next 20 years indicates a robust system that could bring exciting new aviation opportunities to Colorado. Forecasts explored in Chapter 7 indicate that system-wide growth is anticipated in enplanements, based aircraft, and operations through 2038. It is important to note that while increasing aviation demand may generate more economic activity around the state, growing demand could strain existing facilities causing congestion, delays, deterioration of facilities, or less safe conditions on airports. Planning for improvements and developments to accommodate future aviation demand could aid in relieving potential negative impacts driven by undue burden on possibly overstretched resources.

8.4. Summary

Projected system-wide growth in aviation demand may influence the need for airport improvements related to changes in ARC designations and expanding airfield capacities to accommodate increased aviation activity. Additionally, anticipated changes in demand may impact airports eligible for inclusion in the NPIAS, affecting federal funding opportunities for future projects. Furthermore, future performance targets act as guiding measures that aid in the identification of projects which promote improvements to system-wide performance. Conducting comparisons between future performance targets and potential changes signaled by anticipated changes aids in active identifying and prioritizing airport project needs that enhance Colorado's airport system. Improving system-wide performance ultimately promotes maintaining a healthy and robust aviation sector.



CHAPTER 9:
Analysis of System Alternatives

2020 Colorado
Aviation System Plan

Chapter 9. Analysis of System Alternatives

An alternatives analysis is a useful tool in examining scenarios that could take place, understanding their potential impact on the system, and identifying recommendations or solutions that could be considered by the Colorado Department of Transportation (CDOT) to address these scenarios. There is a broad range of topics that may impact the Colorado aviation system in the future, and several have been identified as key topics worth consideration as part of the 2020 Colorado Aviation System Plan (CASP). The following aviation- and non-aviation-related topics were identified for further evaluation through discussions with CDOT Division of Aeronautics and members of the Project Advisory Committee (PAC):

- Aviation-Related Alternatives
  - General Aviation (GA) Fleet-Mix Changes/Electric Aircraft
  - Urban Air Mobility (UAM)/Unmanned Aerial Systems (UAS) Growth
  - Change in Commercial Air Service/Regional Airline Fleet Changes
  - Supersonic Air Travel
- Non-Aviation-Related Alternatives
  - Population Changes
  - Transportation Changes
  - Economic Changes

Each aviation- and non-aviation-related alternative section below is organized with a brief introduction, followed by its impact on the system relative to four overarching categories: infrastructure, funding, workforce, and environmental. Several alternatives have multiple components that are presented such as transportation changes; however, the impacts for the alternatives are combined for purposes of the analysis. The alternatives analysis can be used by CDOT to inform decision-making as it relates to each potential alternative and its impact on the airport system and its future needs.

9.1. Aviation-Related Influences

Many of the aviation-related influences listed below are already starting to be realized at the state and national levels. Advances in technology are being experienced more rapidly than modernizations in policy and regulations, which has the aviation industry struggling to keep up with the vast and significant changes.

9.1.1. GA Fleet-Mix Changes/Electric Aircraft

The FAA Aerospace Forecast Fiscal Years 2019-2039 projects industry-wide declines in piston aircraft to occur over the next 20 years. Fixed-wing piston aircraft comprise the largest segment of the GA aircraft fleet. Forecasts over 20 years anticipate this fleet to decline at -0.9 percent annually, whereas the turbojet sector is anticipated to grow at 2.2 percent annually. The FAA speculates that the shrinkage in number of fixed-wing piston aircraft is influenced by rising ownership costs, an aging fleet, and pilot demographics, which show increases in some pilot certificate categories such as air transport pilots (ATP) to address the commercial pilot shortage, but a large decline in the number of active GA pilots. Additionally, funding and advancements in technology are supporting the development of electric aircraft, which could further transform the future aircraft fleet mix. This includes all electric and hybrid electric, and even turboelectric technology. There is also retrofitting of aircraft to transition from operating with fossil fuels to electric.

Electric aircraft represent the leading-edge of aviation technology driven by the world's growing concern for carbon emissions related to air travel. Electric aircraft applications range from small two-seater aircraft designed exclusively for pilot training to full-sized passenger planes developed for long-haul routes. Current challenges affecting electric aircraft include limited battery capacity, need for more efficient thermoregulation systems and technologies, and limited existing charging infrastructure for aircraft at airports. These challenges may well be the limiting factors in the electric aircraft revolution, but its many benefits and applications for commercial and military aviation have led to significant investments by the federal government and other public institutions, as well as tremendous private investment.

Electric aircraft offer reduced costs as electricity is significantly cheaper than fuel in Colorado, as it is generally nationwide. Electricity generated in Colorado is protected from the market volatility of oil given the current high reliance on coal, including noteworthy increases in renewables to generate electricity in the state. Electric aircraft also present new opportunities for smaller airports as they can be operated on shorter runways and are lighter weight, reducing runway strength requirements. Additionally, their reduced noise generation may allow them to be flown in urbanized areas where noise pollution traditionally has been a concern.

While the focus of this analysis is on electric aircraft, it is important to note that hydrogen-powered aircraft are also under development and in the testing phase. ZeroAvia's hydrogen fuel cell system has zero emissions and would result in 75 percent lower fuel and maintenance costs with fixed-wing, 10- to 20-seat aircraft.[1] The National Aeronautics and Space Administration (NASA) is supporting research for development of all electric aircraft "using a liquid hydrogen fuel cell propulsion system," which would increase efficiency and maintain zero emissions.[2] While hydrogen-powered aircraft are still in testing, electric aircraft are being manufactured and operated on a limited basis today, primarily for training purposes, but there are already orders for use in small regional/commuter airline service.

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[1] ZeroAvia. "Our Mission." 2019. https://www.zeroavia.com/
[2] Quailan Homann. "Aviation." 2019. http://www.fchea.org/in-transition/2019/11/25/aviation

9.1.1.1. Infrastructure

Although a reduction in costs associated with increasing electric aircraft operations could increase mobility across the state, the availability of electric vehicle charging stations significantly limits what facilities electric aircraft can access today. The availability of electric charging stations directly influences the usage and accessibility of electric aircraft across the state. To promote electric aircraft usage, charging stations would need to be built at a variety of airports; this comes with its own challenges. Currently, the industry does not have a single standard for universal charging plug-ins for aircraft, resulting in a literal disconnect between charging facilities and the different types of electric aircraft. Until this equipment is standardized, it may not be financially feasible for airports to install charging stations that only serve specific types of electric aircraft. Additionally, growth in electric aircraft ownership could put substantial strain on current electricity supplies at airports and across Colorado. Rising costs to support the additional electrical capacity and continued demands for more electricity could outweigh the benefits of providing charging stations at remote airports. Electric capacity conditions were not analyzed; however, it is possible that additional electrical generation may be needed. In order to maintain the reduced environmental impacts of electric aircraft, the electricity should be generated by renewable energy sources. Many of these sources are not available to remote communities.

What if… **Electric aircraft usage is limited by the availability of charging stations and renewable electricity generation capabilities in Colorado?**

Could We… **Support a competitive state grant program to help fund development of electric charging stations at airports, and through partnerships with other state agencies and private industry, encourage increasing renewable energy generation in rural areas?**

9.1.1.2. Funding

Traditional fueling facilities generate revenue that can be used to fund airport capital projects, operating costs, and other needs. They also generate revenue that CDOT Division of Aeronautics utilizes to provide funding, support, and capital investments to airports. According to CDOT Division of Aeronautics' analysis of the potential impact of electric aircraft on fuel taxes that support the system, the transition of GA aircraft to electric power would have a minimal impact of less than one percent in total revenue. The largest impact to state funding would be the transition of large commercial aircraft to electric propulsion or some other power supply, which is not anticipated in the foreseeable future.

For individual airports, the loss of fuel sales would need to be made up in some way as these sales are a primary driver of revenues for many GA airports. According to the *Airport Cooperative Research*

Program (ACRP) Report 16: Guidebook for Managing Small Airports, fuel sales were noted as the primary source of revenue for GA airports.[3]

What if... **GA airports lose out on revenues from fuel sales?**

Could We... **Create a new funding mechanism that would allow them to charge for providing electricity for new electric aircraft?**

9.1.1.3. Workforce

The electric aircraft industry is projected to become a commercially viable reality at some time, likely starting with regional/commuter service using small aircraft. As the technology continues to progress and these aircraft come to fruition, aviation professionals may need to acquire new skills to develop, manufacture, and maintain these aircraft. Integrating electric aircraft into current training curriculums for aircraft maintenance and repair could provide established and new aviation professionals with the skill set and knowledge required to support this aircraft engine technology.

What if... **Electric aircraft change the skill sets required by aviation maintenance and repair professionals?**

Could We... **Proactively develop programs so that Colorado's aviation maintenance and repair workforce remains on the cutting edge?**

Bye Aerospace is a pioneer on the forefront of the engineering and production of electric aircraft that produce zero emissions and answer compelling market needs. Bye Aerospace is in the process of developing two aircraft models: The two-seat eFlyer 2 is ideal for flight training. The eFlyer 4 is designed to be an ideal personal aircraft. Bye Aerospace is currently in the testing and certification process for the eFlyer 2 and anticipates that the model will receive final FAA certification as early as first quarter 2022. The eFlyer 4 is currently in its initial development stages and the company plans to fly the prototype by the end of 2020.

[3] ACRP Report 16: Guidebook for Managing Small Airports. http://www.trb.org/Publications/Blurbs/162145.aspx

9.1.1.4. Environmental

One of the key advantages of electric aircraft is the reduced environmental impact in comparison to traditional aircraft. In terms of emissions, electric aircraft have zero emissions during operation compared to fossil fuels, which contribute a large percentage to global greenhouse gases (GhG). However, the production of electric energy does have associated emissions that are not factored into the operation. The concept of "wheel to well" considers the energy consumed and GhG from the creation of the energy "at the well" until it is consumed "by the wheel." The production of electricity produces around 25 percent of the global GhG emissions and 27.5 percent of the U.S.' emissions.[4] Utilizing renewable energy sources to accommodate electric aircraft demand would further reduce aircraft and airport environmental impacts.

What if… **Electric aircraft usage increases demand on Colorado's electric grid?**

Could We… **Promote renewable energy generation at airports through state-driven programs?**

9.1.1.5. Conclusion

The FAA's forecasts for the GA fleet over the next 20 years projects the decline of fixed-wing piston aircraft and rises in turbine, experimental, and light sport aircraft. GA pilots and GA airports may further transform the GA fleet towards the incorporation of electric aircraft and other alternatives due to their reduced costs for fuel and maintenance, ability to operate on smaller runways, and minimal noise impacts to the surrounding communities compared to current aircraft. Fleet-wide transitions to electric aircraft could result in decreased prices for air travel and other aviation-related services to the consumer due to the reduced operational costs for electric aircraft. Environmentally, the electrification of aircraft would reduce operational GhG emissions in comparison to traditional aircraft. To further decrease their environmental impact, airports may seek the integration of renewable energies to reduce GhG emissions produced from electricity generation.

9.1.2. UAM/UAS Growth

Urban air mobility (UAM) has emerged in response to the issues and costs associated with growing congestion of ground transportation networks in cities and the opportunities afforded by the evolution of technology related to unmanned aerial vehicles (UAV). UAM focuses on delivering passenger travel and cargo/delivery services by using specialized electric vertical takeoff and landing (eVTOL) aircraft and highly automated (unmanned) aircraft designed to safely navigate in the low-altitude airspace above high-density areas.

[4] United States Environmental Protection Agency (EPA). "Sources of Greenhouse Gas Emissions." 2018

Exploration and development of UAM has been gaining traction as market opportunities continue to be identified that would benefit from initial implementation across major cities. This has been likened to current use of rotorcraft in major markets such as New York to transport passengers by air instead of by ground. There are many potential opportunities for UAM ranging from "last mile" parcel delivery through the use of small unmanned aircraft to air metro applications similar to today's public transportation options. UAM faces key regulatory, infrastructure, and technological challenges, but the industry is optimistic that some form of implementation could be viable within the next 10 years.

UAM is expected to impact both ground and air travel but given the likely seating configuration of four to five seats per vehicle, UAM is unlikely to have a significant impact on the reduction of vehicle miles traveled (VMT) on highways. UAM are not expected to replace current regional/commuter airline service, at least based on current research and technology. UAM are also not expected to replace long-distance automobile trips. The focus is more on short-haul markets, especially in major metropolitan areas.

Unmanned aircraft systems (UAS) rely on UAV technology and provide an array of uses for commercial, government, educational, and recreational purposes. As UAV usage became more prolific and emerged into a popular market, at least in the small UAS market, it was important to think of UAV technology as more than just the individual aircraft—it is a system that encompasses a variety of factors that contribute to UAV usage.

UAS has already been implemented for a wide array of applications across many sectors. Some applications include delivering real-time footage to inform public safety crews during emergency situations, completing data-gathering efforts that are deemed dangerous or potentially life-threatening, and aerial agricultural spraying for crop maintenance. Since UAS and UAV have been in use for many years, several policy and procedural developments are established to support safe and responsible UAS/UAV usage. However, this technology can be optimized through infrastructure development, strategic investments, proper workforce training, and policy implementation.

Industries, potential users, regulatory agencies, and others will have to consider new challenges and opportunities for UAM and UAM applications as the technology transitions from conceptualization to widespread implementation.

9.1.2.1. Infrastructure

A fully functional and integrated UAM network is needed as implementation moves forward. This network encompasses both airspace and infrastructure on the ground to support the operation and maintenance of UAM. The most significant challenge of integration is the protection of current navigable airspace for the existing system. Further, regulations to mitigate potential land use and height control issues that result from UAM and UAS operation need to be considered. UAM and UAS operations are likely to be different than traditional aircraft activity experienced today and will require additional regulation to support successful integration on the national, regional, and local levels.

What if… UAM is realized as a common form of transportation and UAS usage continues to rise exponentially for recreational and commercial purposes?

Could We… Work with FAA to promote and implement safety regulations to protect the navigable airspace against potential collisions and promote the development of UAM/UAS infrastructure?

9.1.2.2. Funding

Integration of UAM aircraft into Colorado's existing transportation system could transform the way people travel around cities. Airports serve as important nodes in connecting travelers to their destinations and have the potential to evolve into hubs for future UAM networks. Similar to unforeseen challenges that have arisen as a result of Transportation Network Companies (TNC) like Uber and Lyft, airport users utilizing UAM to connect to airports could cause a decline in long- and short-term parking revenue and customer facility charges (CFCs) collected by rental car facilities. Passengers that currently park at airports or rent cars may no longer need these services as a result of utilizing UAM.

What if… UAM becomes a frequent way for airport users to travel to and from the airport?

Could We… Charge a fee for this service (similar to fees associated with ride-sharing applications) to generate a replacement stream of revenue for airports?

9.1.2.3. Workforce

New educational requirements for aviation professionals will be required as UAM and UAS are further incorporated into aviation networks and systems. As an emerging technology, the UAM industry is still in the research and development phase. As it progresses closer to becoming a commercially viable transportation option, it will require a whole new sector of aviation professionals to pilot and maintain these new aircraft, develop and supervise monitoring systems, and complete other skills/jobs critical to UAM operations. An initial operator, Uber Elevate, has laid out a flight plan to start operations in 2023 and has indicated that its fleet will include a fifth seat for a pilot "until autonomous flight is proven out."[5] The actual timing of unmanned UAM has not been put forth as it is highly dependent on regulatory approvals through testing and passenger acceptance. As UAS continue to develop and begin

[5] Jerry Siebenmark. "Uber Elevate Summit Lays Out 2023 Flight Plan." 2019.

to be flown as part of or in tandem with UAM vehicles, more advanced remote pilot certifications may be required in the future. To support a new sector of aviation professionals well-equipped to enter these markets, current educational programs should incorporate best practices regarding these industries as soon as possible.

Of note, CDOT is working with the Colorado Workforce Development Council to develop an industry-led sector partnership to address the shortage of truck drivers. This may serve as a model for existing and potential ongoing aviation workforce shortages.

What if… **Existing educational programs in Colorado could integrate UAM operations knowledge into their courses?**

Could We… **Train a new sector of aviation professionals that have the expertise to develop, maintain, and pilot UAM technologies?**

Colorado has several UAS education programs that provide training and education for prospective UAS professionals. Colorado Northwest Community College (CNCC) offers three courses related to the planning, regulatory, administrative operational processes and knowledge needed to safely operate UAS. CNCC focuses on the commercial and government applications of UAS and the development of further UAS capabilities. CNCC has an FAA-certified Part 107 test center for prospective UAS operators at the school's campus in Rangely.

9.1.2.4. Environmental

Environmental conversations surrounding UAM and UAS trend toward mitigating environmental impacts from the expected high usage and potentially low altitudes these aircraft are expected to operate within. UAM's intended use is to relieve ground transportation congestion utilizing eVTOL to reduce overall GhG emissions. UAS has been used to advance environmental efforts from monitoring illegal deforestation, measuring GhG levels, and tracking soil erosion.

The full environmental impacts of UAM remain unclear since it is still largely in research and development. NASA presented a market study presentation about UAM in November 2018, which cited potential environmental impacts such as noise pollution, light pollution, wildlife strikes, and battery waste.[6] Similarly, Smithsonian America published a study that analyzed GhG emissions from UAS for parcel delivery in comparison to diesel-powered trucks and vans. The study found that while electric-powered UAS could reduce energy use and GhG emissions, traditional trucks and vans would be more efficient and cleaner than non-electric UAS.[7] Additionally, the EPA cited that buildings contributed 12

[6] NASA. "Urban Air Mobility (UAM Market Study." 2019
[7] Constantine Samaras; Joshuah Stolatoff. "Is Drone Delivery Good for the Environment?" 2018

percent of the US' GhG emissions in 2017.[8] The construction and maintenance of new UAM and UAS infrastructure would increase aviation's environmental footprint.

What if… **Increasing demands for UAM result in growing needs for new UAM infrastructure?**

Could We… **Reduce UAM environmental impacts by incorporating LEED standards into new infrastructure?**

9.1.2.5. Conclusion

Continued proliferation of UAS usage and development coupled with the realization of UAM transportation could impact aviation operations throughout Colorado. UAM applications may increase mobility to airports with limited ground transportation infrastructure or utilize airports as a major transit node. Ease in obtaining a Remote Pilot Certification and sustained popularity in recreational and commercial uses indicates UAS usage will continue to grow as users find new ways to use drones to complete numerous applications. To mitigate environmental impacts of implementing UAM and increasing UAS usage, it will be important to utilize alternative fuel and/or electrified aircraft/vehicles and consider the need for LEED standard infrastructure.

9.1.3. Change in Commercial Air Service/Regional Airline Fleet Changes

In the last five years, growth in commercial air service has been supported by very positive underlying factors including:

- Expansion in U.S. gross domestic product (GDP)
- Low unemployment rates
- Greater worldwide consumer buying power
- Relatively low fuel prices
- Low interest rates
- Careful deployment of capacity by airlines to match consumer demand in different markets

Overall, the airline industry has remained profitable, but as a global enterprise the industry is vulnerable to unanticipated disruption brought about by regional conflicts, climate change, or pandemics (such as COVID-19 which is addressed in a separate analysis due to the timing of the pandemic and the progress of the 2020 CASP). This section discusses some of the air service developments where change is already occurring and could be a factor in the next decade, including:

[8] United States Environmental Protection Agency (EPA). "Sources of Greenhouse Gas Emissions." 2018

- Growth at Denver International (DEN), Aspen-Pitkin County (ASE), Durango-La Plata County (DRO), and Montrose Regional (MTJ); and challenges at the smallest airports
- Retirement of a generation of turboprops and regional jets; replacement aircraft either small narrow body jets or new turboprops with fewer than 12 seats
- Essential Air Service (EAS) program remains an uncertainty

Each of these trends is described first followed by a discussion of potential impacts to the Colorado system of airports. **Section 9.2.2** presents non-aviation developments that are likely to influence commercial air service such as use of self-driving cars, high-speed rail, or other technologies such as hyperloops.

9.1.3.1. Growth of Colorado's Air Service Market

Colorado commercial service airports were integral to the state's economic expansion since the recession of 2008. For Colorado this expansion was fueled not only by positive underlying economic factors, but also by significant population and employment growth particularly on the Front Range, by increased demand for travel to vacation destinations on the Western Slope, and by effective air service initiatives at Western Slope destination airports. **Table 9.1** shows growth of 6.6 million enplanements at DEN. Other Colorado airports have also grown, notably ASE, DRO, Grand Junction Regional (GJT), and MTJ.

Over the 10-year period, concentration of capacity and passengers at DEN increased from 92 percent of state enplanements in 2008 to 94 percent in 2018. DEN's share of capacity as measured by available seat miles (ASMs) is even greater, growing from 95 percent to 96 percent. These trends are likely to continue in the near-term as DEN moves ahead with its gate expansion and terminal projects. In 2020, United Airlines signed a lease to add 24 gates, 12 on Concourse A and another 12 on Concourse B, with plans to increase daily departures from 500 to 700 by 2025. United's additions to service in 2020 include several smaller markets such as:

- Riverton, WY
- Sheraton, WY
- Dodge City, KS
- Salina, KS
- Panama City, FL
- Nassau, Bahamas
- Santa Maria, CA

In addition to United's growth at DEN which includes service and facility expansions, Southwest Airlines is building a $100 million maintenance facility at DEN and has plans for 16 new gates on Concourse C to facilitate additional service growth. In 2020 Southwest added new service to Des Moines and Hayden/Steamboat Springs. Beyond United and Southwest at DEN, there is new Frontier service to Newark, and Norwegian service to Rome.[9] GJT also has new United service from GJT to Chicago O'Hare and new Allegiant service to Phoenix-Mesa Gateway.

[9] Denver International Airport, new service announcements through June 2020.

Table 9.1. Growth in Enplanements and Available Seat Miles (ASMs) at Colorado Airports

City	Airport Name	FAA ID	Enplanements			Available Seat Miles (ASMs) (000's)		
			2008	2018	Annual Growth	2008	2018	Annual Growth
Alamosa	San Luis Valley Regional	ALS	7,161	6,798	-0.5%	3,288	1,712	-6.3%
Aspen	Aspen-Pitkin County	ASE	213,381	285,472	3.0%	81,377	237,254	11.3%
Colorado Springs	Colorado Springs Municipal	COS	997,348	883,776	-1.2%	720,406	691,394	-0.4%
Cortez	Cortez Municipal	CEZ	8,401	8,089	-0.4%	4,766	2,806	-5.2%
Denver	Denver International	DEN	24,287,939	30,849,992	2.4%	29,091,617	37,469,762	2.6%
Durango	Durango-La Plata County	DRO	134,386	189,771	3.5%	57,582	101,504	5.8%
Eagle	Eagle County Regional	EGE	212,832	174,369	-2.0%	262,303	229,850	-1.3%
Fort Collins/Loveland	Northern Colorado Regional	FNL	31,094	3,288	N/A*	22,156	N/A	N/A
Grand Junction	Grand Junction Regional	GJT	212,588	239,063	1.2%	98,370	128,577	2.7%
Gunnison	Gunnison-Crested Butte Regional	GUC	36,035	38,213	0.6%	20,377	23,229	1.3%
Hayden	Yampa Valley	HDN	136,600	103,410	-2.7%	119,924	108,103	-1.0%
Montrose	Montrose Regional	MTJ	85,868	134,106	4.6%	58,452	116,992	7.2%
Pueblo	Pueblo Memorial	PUB	4,345	10,500	9.2%	2,115	6,508	11.9%
Telluride	Telluride Regional	TEX	13,325	19,109	3.7%	6,027	898	-17.3%
		All Airports	**26,381,303**	**32,945,956**	**2.2%**	**30,548,760**	**39,118,589**	**2.5%**
		All Airports (less Denver)	**2,093,364**	**2,095,964**	**0.0%**	**1,459,151**	**1,650,845**	**1.2%**
		Percent Denver	**92%**	**94%**		**95%**	**96%**	

**Note: FNL doesn't have 10-year annual growth rate due to the airport's inconsistent air service availability between 2008-2018.*

Sources: FAA Enplanement Data; Bureau of Transportation Statistics T-100 Segment data, 2019

As noted in **Chapter 7**, the regional airline industry did not recover from the 2008 recession as well as the network airlines. **Table 9.2** shows an overall growth in Colorado of passenger enplanements of 2.2 percent annually; however, regional enplanements remained essentially flat. Total aircraft departures have declined less than 1 percent per year overall, but regional departures have declined annually by 2.5 percent.

Table 9.2. Regional Airline Share of Colorado

Colorado	2008	2018	Compound Annual Growth Rate (CAGR)
Regional Enplanements	5,306,234	5,410,924	0.2%
Total Enplanements	26,381,303	32,945,956	2.2%
Percent Regional Enplanements	**20%**	**16%**	
Regional Departures	156,621	121,927	-2.5%
Total Departures	348,365	316,846	-0.9%
Percent Regional Departures	**45%**	**38%**	

Sources: Regional Airline Association; FAA Enplanement Data, 2019

Two divergent trends with relevance for Colorado's small commercial service airports are emerging. The first is retirement of turboprop aircraft and early-generation 50-75 seat regional jets. For the larger markets, small narrow body aircraft are replacing regional jets (100+ seats), often with fewer daily departures. For the smallest markets the trend is reversed: many cities have either lost service or are served by aircraft with fewer than 12 seats.

Currently, three cities in Colorado participate in the EAS program: Alamosa, Cortez, and Pueblo. Boutique Air is the EAS carrier for Alamosa and Cortez and SkyWest provides EAS service to Pueblo. Since 2010, several legislative changes to the program have limited eligibility for subsidies, although Alamosa and Pueblo are among 110 communities that were granted waivers from new eligibility requirements.[10] In 2019, the GAO interviewed many EAS stakeholders to identify the benefits, challenges, and potential reforms for the program. Challenges reported by users and airlines include difficulty recruiting pilots, right-sizing the aircraft to the market, and providing service within the subsidy caps.

For Colorado EAS points, subsidies have grown substantially as shown in **Table 9.3**. However, as has been the case for at least a decade, continuation of EAS service in Colorado will ultimately depend on local support, the availability of eligibility waivers for Alamosa and Pueblo, and decisions by Congress and the U.S. Department of Transportation.

[10] GAO-20-74, Effects of Changes to Air Service Program, and Stakeholders Views on Benefits, Challenges, and Potential Reforms, December 2019.

Table 9.3. EAS Colorado Contracts

Airport	2009	2019	EAS Carrier	
			Previous	Current
Alamosa	$1,853,475	$2,891,307	Great Lakes	Boutique
Cortez	$1,297,562	$3,579,705	Great Lakes	Boutique
Pueblo	$1,057,128	$2,548,067	Great Lakes	SkyWest

Source: Regional Airline Association, 2019

9.1.3.2. Infrastructure

With DEN dominating air service in Colorado, smaller commercial service airports remain heavily dependent on regional air carriers, destination travelers, good winter sports conditions, or EAS subsidies to retain or grow air service.

What if… **The regional markets face an economic downturn or contraction as carriers focus on high-volume, point-to-point service?**

Could We… **Consider facilitating consolidation of traffic at certain commercial service airports and examine multi-modal solutions to provide access to air service from Colorado communities?**

9.1.3.3. Funding

To continue EAS subsidies, both Alamosa and Pueblo received eligibility waivers. Contract renewals are imminent and will depend on decisions by the federal government. Growth in air service at Western Slope airports has come in large part through the efforts of local communities, the Colorado Flights Alliance, the winter sports resorts, and the tourism industry. Air service development programs have been primarily grassroots efforts.

What if… **EAS subsidy levels declined or minimum revenue guarantee requirements increased to sustain air service?**

Could We… **Actively support EAS renewal applications and marshal CDOT and OEDIT technical and financial resources to retain or grow Western Slope air service?**

9.1.3.4. Workforce

The regional air service markets are facing shortages of pilots and certified aviation technicians. The pilot shortage has been somewhat alleviated through increased wages and other incentives. However, there is likely to remain disparity in pay scales between pilots who fly for regional airlines and those who fly for the majors. This difference exists because employment in a regional airline is generally a natural first step in a career path for pilots who aspire to fly for one of the major flag carriers. Licensed aircraft mechanics remain in short supply.

What if… **What if small commercial airports experienced more intense year-to-year fluctuations in air service?**

Could We… **Sponsor airport management training to operate airports with lean staffing and cross utilization?**

9.1.3.5. Environment

According to the Center for Climate and Energy Solutions, U.S. aircraft are responsible for 3 percent of carbon emissions in the U.S. Approximately 25 percent of CO_2 emissions occur when an aircraft is taking off or landing. Some climate change proponents are in favor of minimizing short-haul flying to reduce emissions. For Colorado, a policy to reduce short-haul flying will also reduce air access for some more remote communities.

What if… **A national program to reduce carbon emissions resulted in reduced short-haul air service?**

Could We… **Convert and expand existing efforts toward airport sustainability to maintain air access on spoke routes?**

9.1.3.6. Conclusions

Airports in Colorado serve different functions. As an international hub airport DEN has participated in a dynamic market for air travel and enjoys the strong presence of United, Southwest, and Frontier airlines as well as most other U.S. airlines. Colorado Springs (COS) provides access to the southern Front Range region and serves an extensive military community around Peterson Air Force Base and numerous other U.S. Air Force and Army installations situated within an hour's drive. Commercial service airports on the Western Slope support growing business communities in this part of the state in addition to an avid winter sports and tourist population. EAS communities ensure that there is basic air access to Cortez, Alamosa, and Pueblo. The commercial air service industry is highly sensitive to economic conditions as a large portion of air passengers are traveling for personal reasons. In the last decade, growth of air service has occurred in the largest or most profitable markets. Airlines can move their assets to the markets where risk is the lowest and return is the greatest, making it essential that airports monitor their air service to evaluate potential impacts.

9.1.4. Supersonic Travel

Supersonic air travel is garnering renewed interest as companies construct a modernized Supersonic Transport (SST) aircraft. Development of new engines and new airframe designs and the availability of lighter composite materials may help address some of the historical issues posed by previous SST aircraft. The FAA is ushering this new age of supersonic air travel by initiating two rulemaking activities that would establish noise certification standards for supersonic aircraft and refine guidelines for obtaining flight authorization for testing in the U.S. Congress has also sparked the recent push for supersonic air travel through Section 181 of the FAA Reauthorization Act of 2018. Section 181 stipulates that the FAA administrator support development of regulations, standards, and policies that would permit the certification of safe and efficient operation of civil supersonic aircraft at the federal and international level. Currently, the FAA has been working in partnership with the International Civil Aviation Organization (ICAO) Committee on Aviation Environmental Protection (CAEP) as operations of supersonic aircraft are anticipated to be utilized for international air travel. Their collaborative partnership is intended to develop international standards for noise and emissions applicable to supersonic aircraft and their engines.

9.1.4.1. Infrastructure

A key financial advantage for airports is that these types of aircraft will not require construction of specialized airside facilities to accommodate them. Regulating noise and emissions of SSTs to lessen impacts to surrounding communities or those beneath SST flight paths is a concern. At present, a sonic boom will result every time an aircraft achieves supersonic speeds. Existing noise mitigation regulations pertaining to supersonic airplanes and sonic boom are expressly communicated in the FAA's 14 Code of Federal Regulations (CFR) 91.817 through 14 CFR 91.821. These regulations may change with the new rulemaking activity initiated by the FAA that will set the noise certification standards and determine noise-level requirements appropriate to supersonic aircraft. In similar fashion, emissions certification and safety regulations will need to be established before operations of civil supersonic aircraft can be realized in Colorado.

What if… **Supersonic travel is conducted regularly at Colorado airports?**

Could We… **Facilitate inter-agency partnerships to promote the adoption of noise compatibility, emissions, and safety regulations for our communities?**

9.1.4.2. Funding

The importance of continued advancements in developing a civil SST in the U.S. was made clear with the passing of the FAA Reauthorization Act of 2018. Section 181 of the Act specifically outlined the FAA administrator's responsibility to lead the industry in achieving safe and efficient civil supersonic aircraft. To support this action, 2021 Federal budget proposals for NASA included an increased aeronautics research budget to $819 million, of which supersonic aircraft is a chief program. Specific to SST funding in Colorado, Denver-based Boom Supersonic acquired a $100 million investment in 2019 with 30 pre-orders for their Mach 2.2 airliner, Overture. As more manufacturers follow suit, Colorado could attract other companies which support future SST operations and manufacturing if the industry becomes economically viable. It may be important for the state to leverage their advantage as a top aeronautics industry destination and drive SST companies to locate and/or relocate to Colorado.

What if… Supersonic travel becomes a commercially-viable option domestically and internationally?

Could We… Develop competitive grant opportunities that create an attractive environment for supersonic travel providers to conduct operations at Colorado airports?

9.1.4.3. Workforce

Today, Colorado SST companies such as Boom Supersonic are leading the way in research and development of quieter, more fuel-efficient supersonic aircraft. The industry relies heavily upon innovative engineering and manufacturing professionals to produce commercially-viable SST aircraft. Aviation engineering and manufacturing subsections of the workforce are in high demand to solve the current challenges plaguing the SST industry: fuel inefficiencies, sonic boom generation, and aircraft design safety.[11] In the near term, these professionals are tasked with developing and testing aircraft components capable of utilizing different alternative fuels, creating less drag, and diminishing the impacts of sonic boom. If SST becomes realized, the industry may require staff with specialized knowledge to maintain SST aircraft components and technology, pilots capable of operating the new fleet, and additional manufacturing professionals to produce SST components. At the moment, the industry is still within the research and developmental stages of producing commercially-viable aircraft and the specific demands and desired skills for future aviation professionals once SST become realized are largely unknown.

What if… Supersonic travel requires new skill sets for aviation professionals?

Could We… Integrate supersonic pilot, development, and maintenance training to prepare the workforce for this emerging technology?

[11] Mark Matousek. "Aviation Companies are Plotting the Return of Supersonic Flight – and They Think Their Jets Will be Better than the Concorde." 2018

9.1.4.4. Environmental

One of the major disadvantages that supersonic travel poses is its negative impact on the environment. The International Council on Clean Transportation (ICCT) published a paper on the environmental impacts of SST and estimated supersonic aircraft burn five to seven times more fuel per passenger to achieve supersonic speeds than conventional jets. ICCT estimates the global SST fleet could produce 96 million metric tons of CO_2 per year, which equates to the combined CO_2 emissions of American, Delta, and Southwest Airlines or 20 percent of the aviation industry's global carbon budget.[12] Additionally, noise impacts of SST aircraft is a major point of concern for communities near airports and underneath the flightpaths. To reduce these potential environmental impacts, supersonic aircraft developers are researching alternatives to make aircraft carbon neutral, use alternative fuels, and quiet enough to be flown over land without negatively impacting people below.

What if… **Future SST aircraft used in Colorado are unable to incorporate sustainable components or fuel?**

Could We… **Reduce environmental impacts by adopting state environmental regulations specific to supersonic travel?**

9.1.4.5. Conclusion

Increasing federal and private funding is kickstarting development of supersonic aircraft that could become economically and commercially viable. The FAA is conducting two rule-making activities which would energize the testing and certification of supersonic aircraft in the U.S. SST companies are currently researching and testing methodologies in modernizing aircraft to be quieter, more fuel-efficient, and potentially reduce the environmental impacts which plague the industry. Overall, due to these factors promoting civil supersonic development, SST may return sooner than anticipated.

9.2. Non-Aviation-Related Influences

The following sections discuss non-aviation-related influences paired with actionable ideas to stay in front of the ever-changing aviation industry.

9.2.1. Population Changes

Colorado is anticipating 8.7 million residents in the state by 2050, marking an era of unprecedented growth. The Western Slope region is estimated to experience the highest share of population growth in the same period and comprises seven of the 10 fastest-growing counties according to the Colorado State Demography Office, which anticipates over 67 percent growth in population over the next 30 years. Northern Colorado, which includes Greeley and Fort Collins, is projected to see a 107 percent

[12] Dan Rutherford, Ph.D. Grandon Graver, Ph.D. Chen Chen. "Noise and Climate Impacts of an Unconstrained Commercial Supersonic Network." 2019

population boom and is followed by Colorado Springs, which will experience a significant growth at 60 percent by 2050. The Denver and Boulder metropolitan region, currently home to nearly 3.2 million residents, is anticipating a 45 percent increase in population resulting in more than 1.3 million additional residents. Most of the significant population growth is anticipated to settle in urban areas, while some rural communities may experience limited growth or decline.

9.2.1.1. Infrastructure

Communities in urbanized areas of Colorado's Western Slope (e.g., Grand Junction, Montrose, Delta, etc.) are anticipated to see a growth of almost 66 percent through 2050 according to the Colorado State Demography Office. Urban Northern Colorado (Fort Collins, Greeley-Weld Country, etc.) communities are also projected to double in size over the same period. Airports within these regions may experience rising aviation demand as the population size grows. Airports may need to work closely with CDOT to identify timing and completion of projects that align with the needs of anticipated airport users in the future.

What if… **Populations grow exponentially in the Western Slope and Northern Colorado regions?**

Could We… **Prioritize facility improvements at airports in these regions to accommodate increases in overall aviation demand?**

9.2.1.2. Funding

Although much of Colorado's urban populations are anticipated to see substantial growth over the next 30 years, the Colorado State Demography Office projects rural areas to see very little growth or even decline in the future. Current trends in the state reveal new Colorado populations are more likely to settle in urbanized areas than in rural communities. Per the findings in **Chapter 6. Existing System Performance**, all system airports but one (Gunnison-Crested Butte Regional [GUC]) serve a remote or rural community and contribute to a portion of the system's aviation demand. Smaller GA airports whose aviation demand is derived solely from rural communities may experience a serious decline in activity. Loss in population could result in lowered demand for aviation services at these airports and influence their revenue and funding opportunities.

What if… **Rural populations shift into decline over the next 30 years?**

Could We… **Promote diversification of aviation activities at airports relying on rural communities to increase financial opportunities and resiliency?**

9.2.1.3. Workforce

Rising aviation demand stemming from growing populations may outpace airports' abilities to develop and expand services in response. Without a growing number of aviation professionals, expansion of services may be inhibited, and the additional population can cause negative strains on services and facilities that cannot meet demand. Fortunately, Colorado is anticipated to attract a large labor force with its growing population. According to the findings in **Chapter 7. Forecasts of Aviation Demand**, employment in Colorado is outpacing the national average and is expected to continue through 2038. In addition to a growing labor force in Colorado, the transportation and warehousing industry (which includes the aviation industry) is projected to see a modest 0.9 percent increase in employment over the next 20 years. Increasing access to aviation-related education programs and training may leverage new population into entering the aviation workforce and supporting new demand.

What if… **Population growth results in an exponential rise in aviation demand in the Western Slope and Northern Colorado regions?**

Could We… **Leverage population growth and create accessible workforce training programs to increase the number of aviation professionals and accommodate growing demand?**

9.2.1.4. Environmental

Projected population booms in Colorado's Western Slope and Northern Colorado could outpace the facilities and services currently provided at airports in these regions. To properly accommodate demand, airports may need to construct larger facilities, add new or more frequent routes, and expand other services. In response, airports will increase their environmental footprint to serve growing demand. Similarly, declining populations in rural communities could put undue burden on airports in these regions. For instance, airports experiencing a prolonged drop in airport activity would incur higher operating costs and increased negative environmental impacts to maintain overbuilt facilities. Incorporating sustainable design into new and existing structure could mitigate both the financial and environmental costs associated with population changes.

What if… **Increased demand due to rising population influences airports' environmental impacts?**

Could We… **Promote the incorporation of sustainable practices at airports to offset impacts?**

9.2.1.5. Conclusion

The Colorado State Demography Office projects statewide population in Colorado is predicted to grow exponentially over the course of the next 30 years; however, increased populations are not anticipated to be shared equally across the state's regions. Regions that may experience the fastest growth will remain in urbanized metropolitan areas, with population growth in the Western Slope and Northern Colorado regions. Denver's and Colorado Springs's metropolitan areas are projected to see substantial rises in population through 2050 though not nearly as quickly as the Western Slope and Northern Colorado regions. During this same period of rapid population growth, rural communities are projected to experience stagnant populations, minimal growth, or decline.

9.2.2. Transportation Changes

This section explores emerging transportation technologies that could potentially impact aviation demand in Colorado. Technologies such as self-driving cars, hyperloops, high-speed rail, and smart applications are likely to transform an individual's trip from door to destination. These emerging technologies could affect demand for air service, use of parking and rental car facilities, traditional airport revenue streams, ground access, and basic land use at airports. Given the long planning and financing lead times to make significant changes to airport infrastructure and address funding challenges, airports and CDOT should be monitoring the changes and how they may impact airport facilities and land use programs.

9.2.2.1. Transportation Network Companies (TNCs)

The unexpected emergence and rapid adoption of app-based ride services, referred to as TNCs (Uber, Lyft, etc.) is testament to just how fast new transport modes can capture market share. When these companies and their unique business model emerged in 2012, the category of ride sharing was lightly regulated and TNCs could simply rely on independent drivers and vehicles to support their services. Using mobile apps to connect riders with drivers, TNCs offered fast, low-cost service, and easy payment for door-to-door service. In the case of airports, TNCs became a popular alternative to parking a car at the airport or renting a car. By 2016, TNCs had operating agreements at about 60 airports and by 2019, were authorized to operate at most large hubs as well as many other commercial service airports.

As use of TNCs grows, airport operators faced key issues including:

- Establishing trip fees and permit conditions
- Managing curb congestion and enforcing permit compliance
- Supervising and managing staging areas (location, dwell times, capacity)
- Balancing changes in mode shares (reassigning curbs, hold lots, and fees)
- Ensuring safety of passengers using the services (driver background checks/training and wayfinding)
- Conducting program audits and trip reporting[13]

Early evaluation of the impacts of TNCs on airport revenues by the ACRP has produced a mixed picture in terms of the timing and extent of the impacts.[14] In most cities, TNCs have captured market share from taxis and limos. However, if the airport assesses ground transportation fees on TNCs, these fees for the most part have replaced lost taxi and limo fees. When TNCs replace private vehicle trips, many airports are adding new airport 'per trip' fees that didn't exist before. Less clear are the long-term impacts of TNCs on parking and rental car revenues since expanding demand for air travel has occurred simultaneously with high adoption rates for use of TNCs. TNCs are causing industry-wide disruptions for rental car agencies and subsequently generation of airports' major sources of revenue. These include fees paid by the rental car companies for counter space and their operations, as well as CFCs paid by those that rent cars. Higher percentages of travelers, and especially business travelers, are turning to TNCs for transportation instead of rental car agencies.[15] Additionally, airport users are now less likely to utilize short- and long-term parking facilities in favor of TNCs to provide transportation to and from airports. A TNC modeling study found that parking revenues could drop 3-5 percent as a result of TNC user growth.[16] Losses in parking and CFC revenues could diminish airports' abilities to develop in the future if TNCs continue to divert users from these airport services.

9.2.2.2. High-Speed Rail

High-speed rail development opportunities in Colorado would promote regional connectivity and key transportation nodes such as airport and highway connections. Several feasibility studies have been

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[13] Ricondo, Craig Leiner and RSG, Thomas Adler. ACRP Report 215, "Transportation Network Companies (TNCs): Impacts to Airport Revenues and Operations." 2019.
[14] Ibid.
[15] Ray Mundy. "Current Trends in Airport Ground Transportation." 2019.
[16] Walker Consultants. "Airport Parking, TNC's and Airport Business." 2018

completed in recent years to assess opportunities related to the provision of high-speed rail across Colorado, along the Front Range, and the I-70 Mountain Corridor. More recently in July 2017, Senate Bill (SB) 17-153 created the Southwest Chief and Front Range Rail Commission. In 2018, the Colorado General Assembly made a $2.5 million General Fund transfer to fund the work of the "Rail Commission", including the development of a rail passenger service plan for the Front Range corridor. The state will be reviewing several alternatives, at varying price points, for advancing innovative yet practical pathways for planning and coalition building in pursuit of funding. In July 2019, the Rail Commission selected a consultant to develop the Rail Passenger Service Development Plan and provide project specific National Environmental Policy Act (NEPA) engineering.

9.2.2.3. Other Mobility Solutions

Driven by the same economic factors that propelled growth in commercial aviation, all major modes of passenger travel have experienced steady growth. So too has there been a convergence of digital companies, transport operators, and innovative startups combining efforts to advance new mobility solutions such as autonomous vehicles, eVTOLs, and hyperloops. Smart mobility applications that manage a traveler's journey end-to-end are likely to reshape mobility ecosystems over the next 20 years.[17] Combine a smart mobility app with self-driving vehicles, hyperloops, high-speed trains, inner-city eVTOL stations, and other new mobility-related technologies, and it is possible to imagine coherent end-to-end travel that looks very different than today's segmented trips.

Early research on these mobility solutions suggest the potential to transform air demand and operations at airports. The ACRP has pursued three research projects that begin to address the impacts of new modes of transportation on airports:

- ACRP Report 204, "Air Demand in a Dynamic Competitive Context with the Automobile," (2019)
- ACRP Report 215, "Transportation Network Companies (TNCs): Impacts to Airport Revenues and Operations," (2019)
- ACRP 03-47, "Rethinking Airport Parking Facilities to Protect and Enhance Non-Aeronautical Revenue" (likely publication in 2020)

Each of these reports examines how changes in the use of emerging technologies and adoption rates by different demographic groups will affect activity and revenue at airports. Among the major themes discussed are:

- Increased competition between air travel and the car, especially when self-driving vehicles can offer a private trip with higher levels of amenities and improved communication platforms. A door-to-door solution, if it gained traction, would impact short-haul trips more than long-haul air trips and probably reduce air connectivity at small airports more than larger ones.
- As a contrary scenario, if small aircraft technology improves in terms of comfort, cost, connectivity options, and fuel, these aircraft (e.g., electric aircraft or eVTOL vehicles)

[17] Oliver Wyman. "Mobility 2040, the Quest for Smart Mobility." 2018.

could compete with self-driving cars and lead to more direct short- and medium-distance flights. This scenario would provide a positive outlook for smaller airports.

- To better gauge mode preferences for emerging technologies, it is important to separately analyze both the hard factors (e.g., travel time and cost) and the soft factors (e.g., attitudes and preferences) that go into a mode choice. Demographic groups differ on important matters such as the value of car ownership, desire for privacy, distaste for long-distance trips, stress levels around travel, and appetite for multiple trip connections.
- Increased use of TNCs and self-driving vehicles may have a significant impact on demand for parking and inventory of rental cars at airports. Since parking garages and rental car facilities require long lead times, airport sponsors are already factoring in flexible designs of these facilities for future reuse.

As artificial intelligence (AI) technologies improve and self-driving vehicles move from testing to wider use, these new transportation modes will impact daily life. Early optimism for autonomous cars and hyperloop pilot programs in Colorado has given way to more measured progress. That said, these emerging mobility solutions invite ongoing observation and reassessment in the next Colorado Aviation System Plan (CASP).

9.2.2.4. Changes in Attitudes about Flying

The movement to fly responsibly (or not fly at all) speaks to growing awareness of climate change and the desire to reduce carbon emissions to the atmosphere. In 2019, a recognizable group of "flight-shamers" coalesced in Europe to call attention to the effects of air travel on climate change. Flying responsibly has become a global movement that has had an impact on both airlines and air travelers.

On the customer side, activists are urging air travelers to:

- Use online platforms to conduct meetings and conferences
- Consider the least impactful mode of travel, be it carpooling, trains, or air depending on the distance traveled based on carbon emission calculations
- Avoid short-haul flights as 25 percent of airplane emissions occur during take-off and landing; non-stop versus connecting flights also result in fewer overall emissions
- Buy carbon offsets or participate in projects such as planting trees or clean water initiatives that reduce overall emissions[18]

Airlines are also responding to and participating in alternative fuel and carbon offsetting programs. For example, JetBlue aims to be "the first carbon-neutral carrier in the U.S. in 2020."[19] As part of their program, they are powering some transcontinental flights partially with biofuels and revamping their fleet to include more fuel-efficient aircraft. Other carriers are ending on-board duty-free sales to reduce aircraft weight and in Europe, some carriers are charging extra fees to offset emissions. United Airlines has a CarbonChoice carbon offset sponsorship program with its corporate customers where United will purchase carbon offsets for corporate travel and invest in projects that will reduce GhG.

[18] https://www.nomadicmatt.com/travel-blogs/flight-shaming-flying-environment/, posted January 21, 2020.
[19] https://skift.com/2020/01/23/jetblue-ceo-warns-flight-shaming-is-coming-to-the-u-s/, posted January 23, 2020.

Currently, the company and its corporate partners are participating in a forest conservation program in Peru.[20]

Climate action is taking place on a project-by-project basis. If climate change conviction increases, actions to reduce carbon emissions are likely to increase and become more coordinated. For Colorado, this is a timely issue that merits ongoing monitoring as concerted efforts to address climate change will undoubtedly affect travel patterns and the Colorado system of airports.

Infrastructure

Multiple and extensive feasibility studies for high-speed rail have already been completed in Colorado, helping position the state to break ground on new transit networks. Furthermore, Colorado's potential for hyperloop development has led to expedited research, testing, and potential implementation in the future. If these developments were to be realized, Colorado would have supplemental transportation networks and modes to quickly move people and goods over long distances across the state. Although these additions would enhance the overall multi-modal transportation system in Colorado, airport users may transition to these new modes for travel, which could decrease aviation activity for some airports.

What if… **Interregional and interstate hyperloop or high-speed rail networks are realized in Colorado?**

Could We… **Influence new transportation network alignments to further increase access to Colorado airports and protect them from loss of demand through the diversification of services and revenue streams?**

Funding

The two greatest concerns pertaining to TNC operations and self-driving vehicles at airports are the loss of revenues from airport parking, rental cars, and CFCs, and curbside management due to congestion. The use of TNCs in favor of driving to the airport or renting a car has reduced parking revenue at some large airports. As more users favor TNCs for transportation to and from the airports over renting cars, airports may continue to see reduced collection of CFCs and revenue generated from rental car agencies. For large- and medium-hub airports, parking revenues and rental car revenues (including CFCs) are the largest sources of income, so any reduction can be impactful.[21] Airports can help to reduce the impacts of parking revenue loss by implementing fees for TNC pick-up and drop-off, but often these fees are not enough to overcome the overall revenue loss, particularly if parking revenues decline. Moreover, curbside management concerns result in the designated pick-up/drop-off lanes becoming overly congested, reducing traffic flow and creating safety concerns particularly in

[20] https://www.united.com/ual/en/us/fly/company/global-citizenship/environment/carbon-offset-program.html

[21] Ricondo and RSG, ACRP Report 215, Transportation Network Companies (TNCs): Impacts to Airport Revenues and Operations, August, 2019.

front of the terminal. It is anticipated that these issues will continue to worsen over time without the appropriate policies in place.

What if… **TNCs and AVs continue to impact rental car and parking revenues while increasing curb demand?**

Could We… **Impose fees on service providers that would alleviate impacts to revenue and fund necessary infrastructure to accommodate increased curbside demand?**

In May 2019, the Colorado State Legislature passed SB 19-239, which directed CDOT to convene a group of appointed stakeholders (the Working Group), to conduct a study, and solicit policy recommendations. The Working Group was charged with evaluating impacts of the emerging mobility providers and providing feedback on a range of potential fee structures on motor vehicles used for commercial purposes, as defined by SB 19-239, that could be used to encourage the use of zero-emission vehicles (ZEVs) and shared rides in emerging mobility providers.

Workforce

The prospect of new mobility alternatives may lower demand for air service and its supporting workforce. Self-driving vehicles could replace taxi, limousine, and TNC drivers engaged in 'car-for-hire' services. That said, this next generation of sophisticated alternatives to air travel will also spawn new employment opportunities. It may be too early to build new training programs around these emerging industries; however, new mobility alternatives present opportunities for workforce development.

What if… **New mobility alternatives lower demand for traditional air travel?**

Could We… **Support training programs so that Colorado residents have opportunities for workforce training and new jobs?**

Environmental

Advocacy groups that favor reductions in carbon emissions strive to lower demand for air travel in European countries in favor of alternate ways of travelling. Environmentally conscious travelers in the U.S. may evaluate alternative forms of transportation when GhG emission concerns become more widespread and begin to affect modal choices of travel.

What if... Climate change advocates are successful in reducing aviation demand nationally and in Colorado?

Could We... Support Colorado-specific sustainability certification programs for aviation professionals and airports while promoting current sustainability practices and commitments to the public?

Conclusion

The integration of new transportation technologies into a robust ground transportation network in Colorado could vastly improve mobility and access across the state. Implementation of high-speed rail or regional hyperloop would increase inter-regional connectivity and much larger interstate development would provide long-distance transportation opportunities. Other changes such as the continued popularity of TNCs and the rise of the social movement targeting carbon-emitting industries could affect airports in the future.

9.2.3. Economic Changes

This section explores changes in the economy that could potentially impact aviation demand in Colorado.

9.2.3.1. Economic Changes due to Climate Change

Colorado's outdoor recreation industry is a significant contributor to the state's economy and its winter tourism industry makes up a large portion of it.[22] Since Colorado's winter tourism is weather dependent, and by extension, climate dependent, climate change will affect winter tourism in the state. Climate change impacts of reducing snow cover or changing the patterns of annual snowfall have shown to have negative consequences to Colorado's winter tourism and air and aerospace industries. Studies by Colorado Ski Country USA and REI found that the state's winter sports industry and winter tourism generate between $2.5 and $4.8 billion in economic activity.[23] This activity supports the tourism and recreation sector creating up to 43,000 jobs and a large contribution to state revenues.[24]

The economic impact of the state's winter sports industry also extends beyond Colorado's ski communities. It has a symbiotic relationship with the aviation industry in that the winter sports industry depends on air transportation to bring domestic and international visitors, while the aviation industry depends on the state's winter sports industry to generate demand for its services. During the 2013-14 winter season, winter sports enthusiasts accounted for 588,000 deplanements at DEN, or 8

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[22] Shelesky, Stephen. 2016. Examining the Economic Impacts of Climate Change on Colorado Ski Communities Through 2050. University of Colorado at Boulder.
[23] 1) Colorado Ski Country USA. "Economic Study Reveals Ski Industry's $4.8 Billion Annual Impact to Colorado." https://www.coloradoski.com/media_manager/mm_collections/view/183; 2) Protect Our Winters. "The Economic Contributions of Winter Sports in a Changing Climate." https://gzg764m8l73gtwxg366onn13-wpengine.netdna-ssl.com/wp-content/uploads/2018/02/POW_2018_economic_report-1.pdf
[24] Ibid.

percent of all non-connecting arrivals to DEN in that period.[25] As a response, winter sports destinations like Vail and Aspen are implementing environmental actions to reduce the impacts of climate change on their communities and supporting climate advocacy groups such as Protect Our Winters (POW) to influence climate policy changes at the national level. POW advocates for policy changes such as transit electrification, increased renewable energy generation, etc. to protect alpine and other winter environments for current and future generations to enjoy.[26]

Sensitivity Analysis Methodology

The sensitivity analysis used the Colorado Dynamic Calculator[27] to evaluate how an incremental change in snowfall would impact Colorado's economy due to a decline in visitor spending and airport operations, with the assumption that there will be some mitigation from attempts to substitute winter sports revenues with more non-snow-based options. Other assumptions that were referred to in the sensitivity analysis include:

- A decrease in precipitation due to climate change, leading to a 10 percent decline in number of annual visitors to Colorado for winter tourism.
- National Ski Areas Association's (NSAA's) estimated number of visitors participating in winter tourism or winter sports in Colorado (**Table 9.4**).
- Declines in visitor spending by visitor type focus only on international and domestic air travelers, and therefore represent a more conservative estimate if you consider day-trippers and others traveling from the region by car.
- Airport-specific visitor spending parameters within Colorado's Dynamic Calculator were used since spending was by category and specific to each region. Eight airports were modeled in this scenario including Denver International, Eagle County Regional, Aspen-Pitkin County, Gunnison-Crested Butte Regional, Durango-La Plata County, Grand Junction Regional, Telluride, and Yampa Valley Regional Airports.

Table 9.4. Total Annual Winter Tourism Visitors to Colorado

Type of Visitors for 2018 Season	Number of Winter Sports Visitors
International Visitors[28]	552,000
Domestic (non-Colorado Resident) Visitors	7,038,000
Local Visitors/Colorado Residents	6,210,000
Total	**13,800,000**

Sources: Fly Denver, "International Traffic at DEN accounts for over 4% of the airport's total passenger traffic," 2019; Coloradoan News, "Colorado Ski Industry Economy", 2015

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[25] Colorado Ski Country USA. "Economic Study Reveals Ski Industry's $4.8 Billion Annual Impact to Colorado." https://www.coloradoski.com/media_manager/mm_collections/view/183
[26] Protect Our Winters. "Our Work". https://protectourwinters.org/
[27] The Colorado Dynamic Calculator was developed by EBP US to enable CDOT to perform simple updates when airport conditions change and to conduct "what-if" analyses to estimate economic impacts of airport conditions or regional economies in the future.
[28] International visitors account for four percent of total overnight visitation, but their impact is significant due to their high rate of spending.

9.2.3.2. Infrastructure

With a decline in winter sports-related tourism, airports in the state that serve visitors could find themselves overbuilt for servicing reduced passenger levels. The exact impact on airport infrastructure from declining winter tourism would depend on whether or not the remaining seasons' travelers were also reduced.

9.2.3.3. Funding

The combined statewide impacts of lost visitor spending and decreased airport operations of 10 percent results in losses of $990 million in value-added and $1.5 billion in business revenues. Reductions in visitor spending were distributed to each of the eight airports based upon proximity to large regional resort destinations. Analysis was constrained to the 20 largest resorts in Colorado due to availability of visitor data. Included in the $1.5 billion of lost business revenue is a $476 million reduction expected from declining supplier sales and income re-spending.

In addition to visitor spending losses, reductions in on-airport activity due to reduced passenger volumes will also be felt. Based on the decline of assumed airport visitors to these eight airports, the estimated economic loss to proportional airport operations would be $708 million in value-added and over $1 billion in business sales leading to losses in sales tax revenues.

What if… **Climate change impacted tourism and reduced visitor spending?**

Could We… **Work with airlines to maintain service to current destinations, perhaps with different sized aircraft; and work with tourism agencies to market alternative active tourism leveraging the Rocky Mountains and traditional spring- and fall-weather activities?**

9.2.3.4. Workforce

The combined impacts of lost visitor spending and decreased operations of 10 percent to the air industry could result in losses of 12,184 jobs and $645 million in payroll. The most impacted industries relating to direct visitor spending losses would be services, retail, transportation, and health services. These industries predominantly serve the tourist and visitor markets with lower wages, less than full-time employment, and are often seasonal. Short-term wage earners may rely on this income as employment opportunities in other industries outside of tourism may be scarce. **Table 9.5** shows that 4,465 additional jobs would be lost due to reduced visitor spending in winter tourism.

Table 9.5. Job Impacts of Reduced Visitor Spending Due to a 10 Percent Decline in Winter Tourism

Sector	Jobs			
	Direct Impact	Supplier Sales	Re-spending of Income	Total Impact
Agriculture & Extraction	0	-9	-6	-15
Utilities	0	-5	-2	-7
Construction	0	-19	-9	-28
Manufacturing	0	-14	-8	-22
Wholesale Trade	0	-20	-25	-45
Retail Trade	-186	-25	-126	-337
Transportation	-257	-21	-19	-297
Postal & Warehousing	0	-43	-7	-50
Media and Information	0	-24	-14	-38
Financial Activities	0	-135	-133	-268
Professional & Business Services	0	-246	-106	-352
Education & Health Services	0	-4	-164	-168
Other Services	-2,467	-138	-229	-2,834
Government	0	-2	-2	-4
Total	**-2,910**	**-705**	**-850**	**-4,465**

Source: EBP US; Colorado Dynamic Calculator, 2020

In addition to the visitor spending losses, reductions in on-airport activity due to reduced passenger volumes would also experience a loss in additional jobs and payroll (7,719 additional jobs and a loss of $480 million in payroll). The job losses by sector are displayed in **Table 9.6**.

Table 9.6. Job Impacts of Reduced Airport Operations Due to Air Visitor Losses

Sector	Jobs			
	Direct Impact	Supplier Sales	Re-spending of Income	Total Impact
Agriculture & Extraction	-1	-100	-15	-116
Utilities	-2	-5	-6	-13
Construction	-0	-59	-25	-84
Manufacturing	-57	-22	-25	-104
Wholesale Trade	-4	-54	-70	-128
Retail Trade	-17	-17	-341	-375
Transportation	-2,984	-237	-53	-3,274
Postal & Warehousing	-8	-502	-23	-533
Media and Information	-17	-29	-42	-88
Financial Activities	-46	-195	-364	-605
Professional & Business Services	-124	-477	-300	-901

Sector	Jobs			
	Direct Impact	Supplier Sales	Re-spending of Income	Total Impact
Education & Health Services	-26	-4	-449	-479
Other Services	-200	-133	-620	-953
Government	-49	-10	-7	-66
Total	**-3,535**	**-1,844**	**-2,340**	**-7,719**

Source: EBP US; Colorado Dynamic Calculator, 2020

What if… **CDOT supported a statewide program to help train airfield and terminal airport workers for other potential airport- and transportation-related jobs?**

Could We… **Work with other state agencies to support workforce training and implement economic development strategies to bolster impacted segments of the labor force and help foster career ladders across airports?**

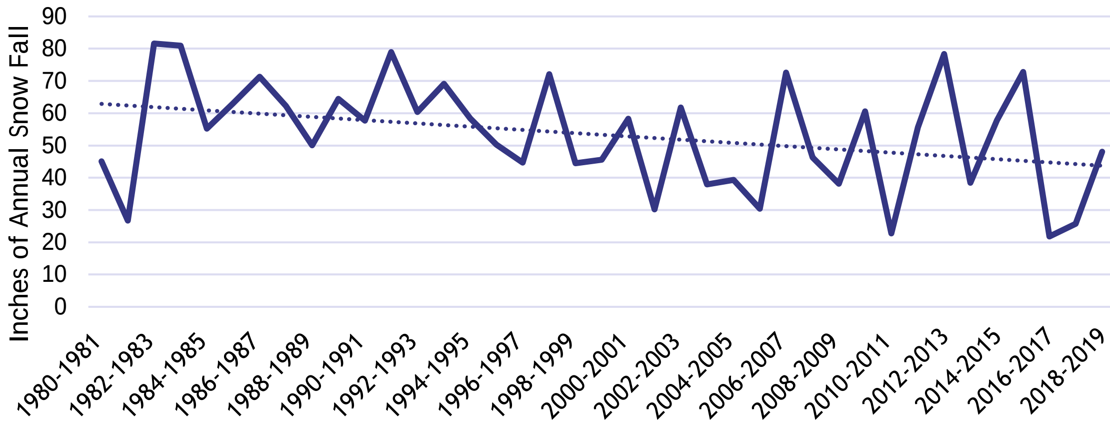
9.2.3.5. Environmental

Winter sports resorts and supporting industries rely on good snowfall conditions for profitable seasons. Climate warming can reduce snowfall and cause shorter snow cover seasons.[29] Seasons with warmer temperatures or low precipitation impact the industry. Although resorts can make up for periods of low precipitation via snowmaking, temperatures above freezing limit the effectiveness. Climate change poses a possible threat in both regards.

The 30-year average for annual snowfall is 55.7 inches per season for Colorado. Despite some recent years with over 70 inches of snow, there is growing variation in snow totals from year to year, and the overall trend is showing a slow decline in annual snow totals as shown in **Figure 9.1**. Forecasts suggest reductions in winter precipitation in the lower Colorado region (Gergel et al., 2017). An analysis of the correlation between skier visitations and Snow Water Equivalent (SWE)[30] serves as a proxy for the relationship between snowfall and skier visits. Results from that analysis showed strong positive correlation between skier visits and total SWE for most states in the western U.S. Shelesky (2016) also found that average SWE is a significant driver of skier visitation in Colorado.

[29] National Snow & Ice Data Center. "Snow and Climate." https://nsidc.org/cryosphere/snow/climate.html
[30] Snow Water Equivalent is a snowpack measurement in which the amount of water within a snowpack is evaluated. This is then thought of as the depth of water that would result if the snowpack were to melt entirely (USDA Natural Resources Conservation Service). https://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/?cid=nrcs142p2_046155).

Figure 9.1. Annual Snow Totals in Inches, 1980-2019



Source: National Oceanic and Atmospheric Administration (NOAA), National Weather Service, 2019

What if… **CDOT worked with tourism agencies and bureaus to market alternatives to activities that are not reliant on snow-related activities?**

Could We… **Diversify the state's tourism activities to include year-round attractions that not only attract more tourists but also remove the dependence on winter tourism for revenues?**

9.2.3.6. Conclusion

The winter tourism industry is important to the economic vitality of Colorado. A few bad seasons could result in major impacts to supporting industries and impact rural parts of the state the most. A permanent shift in snowfall due to climate change would require a strategic response including economic development, workforce training, and proactive promotion to bolster the economy, real estate markets, and seasonal aviation.

9.2.3.7. Economic Changes in Aerospace

This scenario considers economic loss or gain from changes in Colorado's aerospace industries and is focused on aerospace equipment manufacturing and local industry supporting air operations. The scenario also examines the impact of higher operating costs and reductions in service.

Sensitivity Analysis Methodology

Colorado's aerospace industries include many companies that are developing a complete spectrum of products and systems for commercial, military, and civil space applications. The state hosts the second largest aerospace economy in the U.S., with more than 55,000 workers and 997 companies across Colorado. Two sectors that play a major role in Colorado's aerospace industry are aerospace product and parts manufacturing and support activities for air transportation. These industries support the state's large aerospace presence, commercial aviation, and GA operations.

This aerospace alternative estimates a scenario in which these two industries decline back to 2008 recession levels, including a 14-percent decline in the Aerospace Industry and a 20-percent decline in Support Activities for Air Transportation.

9.2.3.8. Infrastructure

Aerospace Product and Parts Manufacturing and Support Activities for Transportation are two supporting industries that play an important role in affording airlines, passengers, and cargo a safe and functional infrastructure to operate in airports. Aerospace Product and Parts Manufacturing generally includes establishments that are engaged in activities such as manufacturing aircraft, missiles, space vehicles and their engines, propulsion units, and auxiliary equipment. As of 2017, this industry saw a total revenue of $244 billion across 1,754 establishments in the U.S.[31] Industries in the Support Activities for Transportation subsector provide services which support transportation. These services may be provided to transportation carrier establishments or to the general public. This subsector includes a wide array of establishments, including air traffic control services, cargo handling, and motor vehicle towing. As of 2017, this industry saw a total revenue of $26.9 billion across 6,105 establishments in the U.S.[32]

Declines in these two aerospace-related sectors would have an impact on general state infrastructure. Depending on the locations of the businesses, the most likely impact on airport infrastructure would be due to lost commercial service and GA passengers who are no longer flying due to the declines in business activity.

What if… **CDOT were to implement a statewide airport sustainability program to assist airports in maintaining infrastructure related to the aerospace sector?**

Could We… **Be prepared with viable airport infrastructure to service aerospace industries when the "next recession" turns around and demand for aerospace products increases at national and/or international levels?**

9.2.3.9. Funding

The overall impact of the 14-percent and 20-percent reductions to Colorado's Aerospace Product and Parts Manufacturing and Support Activities for Air Transportation industries includes a loss of $1.3 billion in business sales within Colorado. This is due to direct industry losses, a decline in purchases of supplier goods and services (for example, air passenger transportation services at Colorado airports and

[31] United States Census Bureau. Table EC1731BASIC: Manufacturing: Summary Statistics for the US: 2017. Dataset: ECNBASIC2017.
[32] Table EC1748BASIC: Transportation and Warehousing Statistics for the US: 2017. Dataset: ECNBASIC2017. Economic Census. United States Census Bureau.

the purchase of tires from wholesalers and retailers in the state), and the income impact from reduced jobs and resident spending. The decline in sales corresponds to a loss of $367.8 million in labor income and a decline of 5,050 jobs. Overall statewide economic activity would decline by $558 million, with an additional loss of significant income tax revenue.

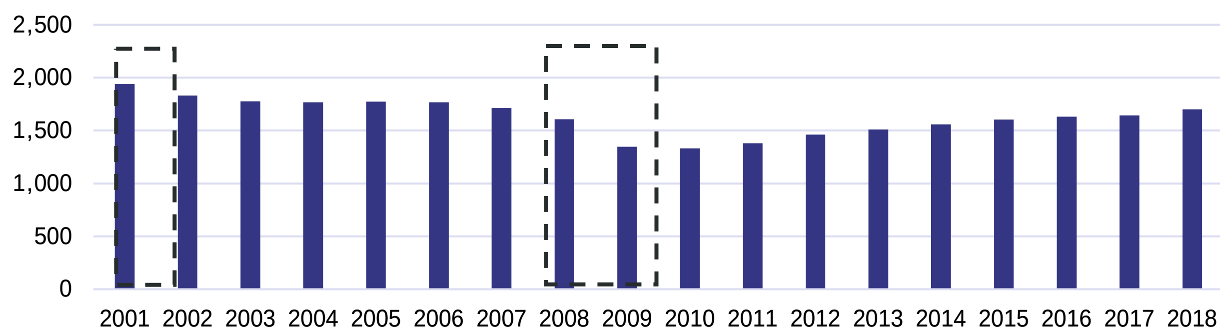
What if… **CDOT explored innovative revenue programs for airports to mitigate losses from passenger and cargo services due to the reduced aerospace sector?**

Could We… **Lead in creating funding sources for improvements and modernization of airports that could withstand losing traditional revenues?**

9.2.3.10. Workforce

In 2018, the Aerospace Product and Parts Manufacturing industry had 1,702,100 employees nationwide. Two periods that saw a drop in employment growth were from 2001 to 2003 and 2008 to 2010. These two time periods correspond with the economic recessions the U.S. experienced in the early 2000s and in 2008. The Great Recession in 2008 had the more significant effect, where employment growth was more stagnant (**Figure 9.2**).

Figure 9.2. Transportation Equipment Industry Jobs (NAICS 336), Nationwide (in Thousands)

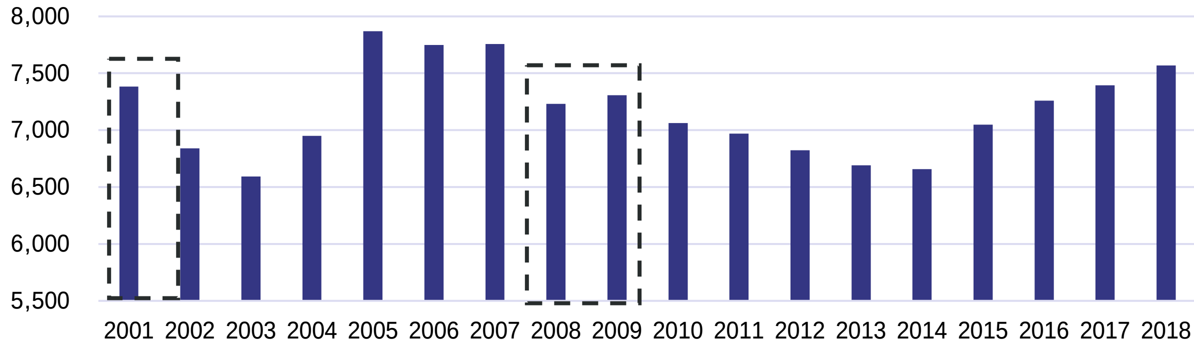


Note: the boxes represent recession periods

Source: Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW), 2019

The job trends for the Aerospace Product and Parts Manufacturing industry in Colorado were more variable than the national trend during the same time period. As the bars for the 2001 and 2008 recessionary periods show, Aerospace Products and Parts Manufacturing employment also shows declines following the recessions and eventually returns to positive growth (**Figure 9.3**). Job growth since 2015 averaged 3.3 percent for Aerospace Products and Parts Manufacturing through 2018.

Figure 9.3. Aerospace Products and Parts Manufacturing in Colorado[33]

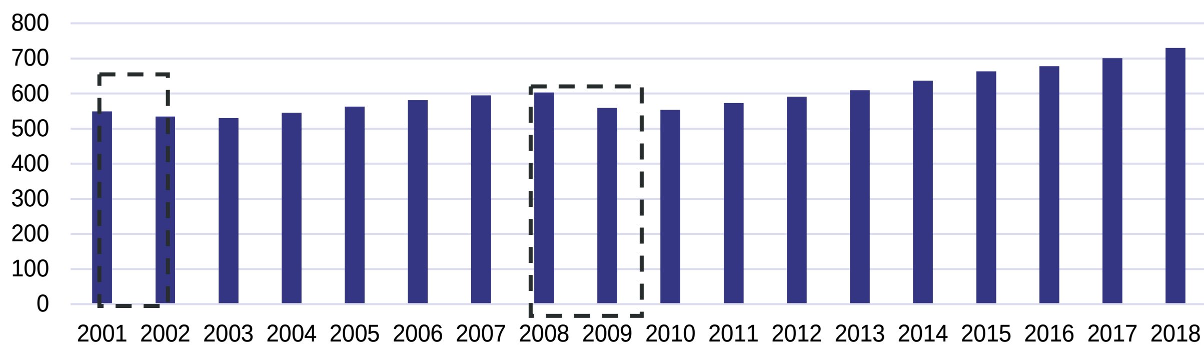


Note: the boxes represent recession periods

Source: Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW), 2019

The Support Activities for Transportation Industry had an average nationwide number of 729,500 employees in 2018. Similar to the Aerospace Product and Parts Manufacturing, the Support Activities for Air Transportation industry also saw a decline during the two economic recession in the early 2000s and in 2008. As shown in **Figure 9.4**, compared to NAICS Sector 336, the 2000 and 2008 recessions did not have as much of a significant effect on NAICS Sector 488 (Support Activities for Air Transportation).

Figure 9.4. Support Activities for Air Transportation Jobs (NAICS 488), Nationwide (in Thousands)



Note: the boxes represent recession periods

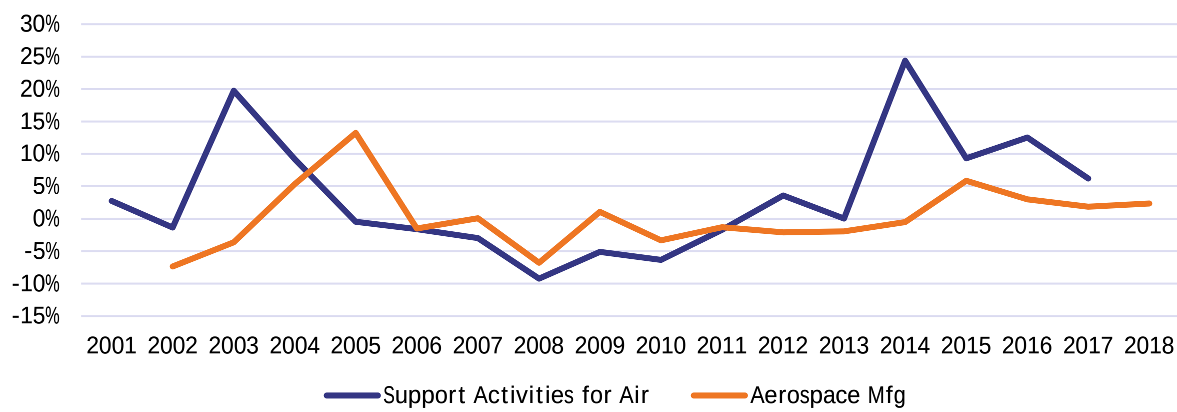
Source: Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW), 2019

The Support Activities for Air Transportation industry in Colorado fluctuated more than the national trend for the same time period. Like the Aerospace Product and Parts Manufacturing industry, the Support Activities for Air Transportation employment declined in the 2008 recession and then saw positive growth starting in 2015 that continued through 2018 at a growth rate of 13.1 percent (**Figure 9.5**). In 2001, the industry did not see a decline, but instead saw a positive change of 2.7 percent between 2001 and 2002. The recession hit the industry in 2002 with job losses of 1.4 percent between

[33] Note: dashed bar represents recessions.

2002 and 2003 and returned to positive growth from 2003 to approximately when the next recession hit the U.S. economy in 2008. The annual growth trends for both industries are shown in **Figure 9.5**.

Figure 9.5. Job Growth by Industry, 2001-2018



Source: Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW), 2019

Sending the industry back to recession levels would result in a direct loss of 1,070 jobs for Aerospace and a loss of 1,050 jobs for Support Activities in Colorado. The drivers behind these reductions could be another recessionary period, declines in flight operations, or general domestic declines in aviation manufacturing. While impacts to the broader aviation industry will have national impacts, a recession would have a larger impact across all sectors of the Colorado economy. Therefore, this is just a snapshot of how the economy will respond to these two industries returning to recession levels.

What if… **CDOT created a statewide program to bolster the aerospace industry as well as maintain critical airport infrastructure during periods of economic turmoil?**

Could We… **Maintain the core of Colorado's aerospace industry and be first in line when national and international corporations are ready to reinvest in the industry as the recession eases?**

9.2.3.11. Environmental

No tangible environmental impacts were identified from potential industry reductions. The reductions are likely to result in fewer cars on the road due to less workers and less energy consumption by the businesses.

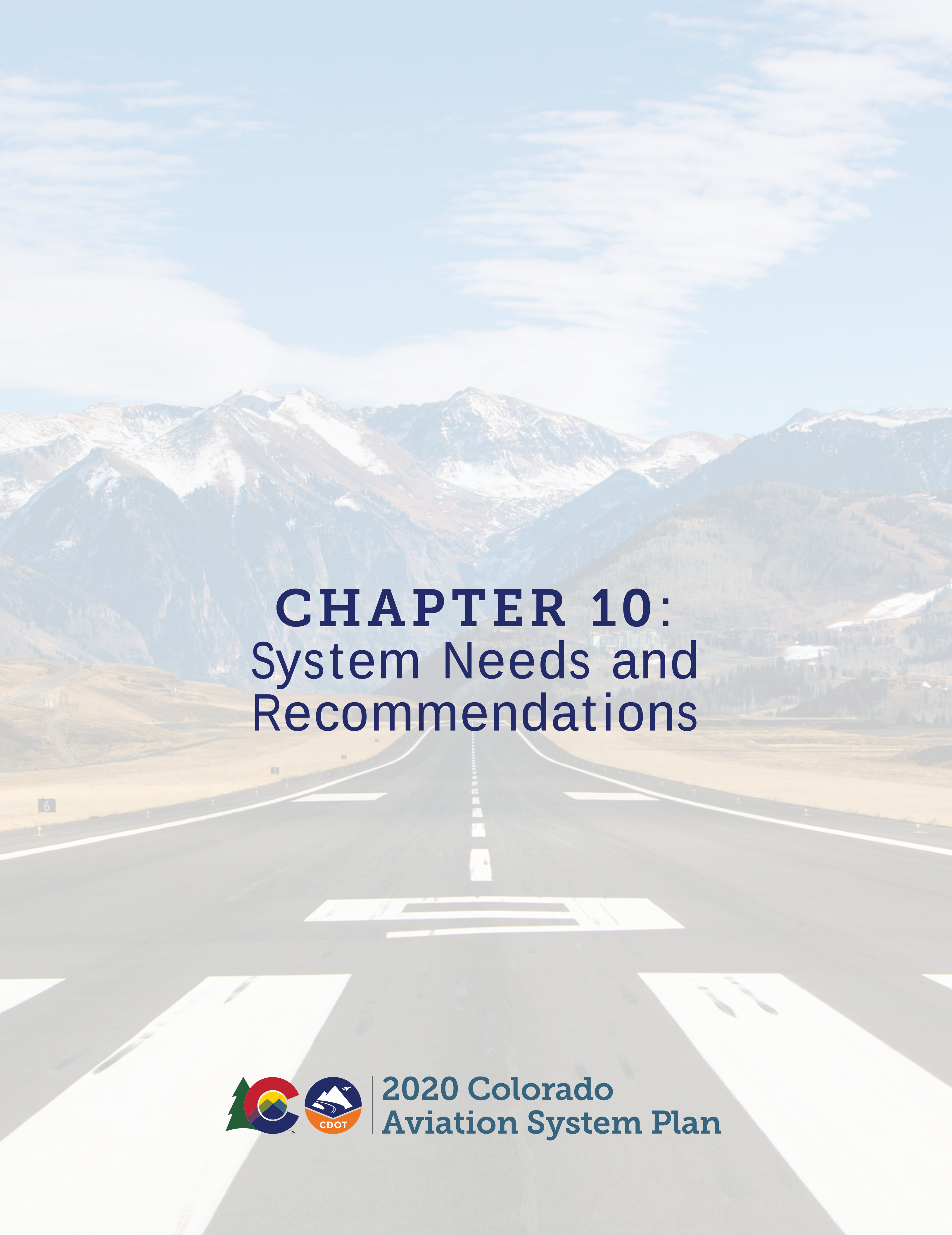
9.2.3.12. Conclusion

The aerospace industry is a major contributor to the Colorado economy. Every job gained in these industries results in another two and a half jobs across other sectors of the economy. This scenario demonstrates that returns to recession levels in the Aerospace and Support Activities for Air

Transportation industries results in reductions of 14 percent and 20 percent, respectively. This means a loss of $558 million in economic activity to Colorado's economy. While CDOT cannot individually affect national and international economic trends, the analysis demonstrates the importance of maintaining Colorado's position and preserving the core of its aerospace industry. This industry has a significant reliance on airports and can be a major contributor to the state's quick emergence from a recession.

9.3. Summary of Alternatives

This analysis summarizes the potential impacts of seven alternative categories, some of which had multiple events that could affect the aviation system. Each alternative scenario was examined to determine infrastructure, funding, workforce, and environmental impacts, with identification of a potential action that could be considered by CDOT Division of Aeronautics to address the scenario. The use of new aviation and transportation technologies may have the most significant influence in the future facilities and services airports deliver to meet changing needs. Changes in population and economic environs may also influence the system by influencing aviation needs at the state and regional levels. It will be important for airports to increase their resiliency against future effects diversifying revenue streams and funding opportunities, growing the aviation workforce, and incorporating sustainable practices.



CHAPTER 10: System Needs and Recommendations

2020 Colorado Aviation System Plan

Chapter 10. System Needs and Recommendations

10.1. Introduction

This chapter serves as the culmination of the 2020 Colorado Aviation System Plan (CASP) and presents the final recommendations, including the financial needs related to achieving the system goals. As mentioned in **Chapter 1**, goals and performance measures (PMs) are defined as follows:

- **Goals**. Provide direction for desired results for the state system in key result areas and serve as a starting point for defining objectives and performance-related metrics
- **PMs**. Directly relate to measuring the system's performance in meeting the goals

The four goals developed in **Chapter 1. Goals and Performance Measures** are illustrated below in **Figure 10.1**.

Figure 10.1. 2020 CASP Goals

Sources: CDOT Division of Aeronautics; Kimley-Horn, 2020

In addition to the four goals, 14 PMs were developed and are presented below in **Table 10.1**.

Table 10.1. 2020 Goals and PMs

Goal	Performance Measure
Safety and Efficiency	Percent of Airports with Approaches Negatively Impacted by Obstructions
	Percent of Airports that Have Full Perimeter Wildlife Fencing
	Percent of Airports that Have Adopted Land Use/Height Controls
	Percent of NPIAS Airports that Meet Current FAA Design Standards Under AC 150/5300-13A
Access and Mobility	Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building
	Percent of Population within a 30-Minute Drive Time of an All-Weather Runway
	Percent of Airports with Adequate Terminal Capacity
	Percent of Airports with Adequate Transient Hangar Spaces
Economic Sustainability	Percent of Airports with Necessary Fuel Type, Available 24/7
	Percent of Airports that Support the Aerospace Manufacturing, Technology, and/or Testing Industry
	Percent of Airports with Adequate Utilities
System Viability	Percent of Airports with Certified On-Site Weather Reporting (AWOS or ASOS)*
	Percent of Airports with Pavement Maintenance Programs (PMPs)
	Percent of Airports with an Average Runway and Taxiway Pavement Condition Index (PCI) of 70 or Greater

**AWOS = Automated Weather Observing System; ASOS = Automated Surface Observing System*
Sources: CDOT Division of Aeronautics; Kimley-Horn, 2020

The financial needs presented in this chapter represent the development costs of recommended projects that would improve the system to the desired level. Second, performance measure recommendations, as well as additional studies and program recommendations, are documented to aid the Colorado Department of Transportation (CDOT) Division of Aeronautics in strategically leveraging planning and funding to achieve the future needs of the system and the goals established for the 2020 CASP.

Airports considered to be deficient in meeting the PMs and/or facility and service objectives (F&SOs), both in terms of the existing and future system, were reviewed to determine the recommended projects needed to satisfy those components. The financial needs identified in the CASP provide CDOT Division of Aeronautics with information that can be used in decision-making to align future project funding with the desired outcomes for the system. Following the financial needs component, the recommendations and implementation plan outlines actions that CDOT Division of Aeronautics may consider in executing 2020 CASP recommendations. The actions described incorporate best practices in strategic planning for the enhancement of the system's overall performance.

10.2. Financial Needs

Financial needs in this section are generated utilizing data from **Chapter 6. Existing System Performance, Chapter 7. Aviation Demand Forecasts**, and **Chapter 8. Future System Performance**. Recommended projects are derived from airports that did not meet PMs and/or F&SOs in accordance with future performance targets. In certain cases, where a facility and service objective or PM was driven based on the number of based aircraft or annual operations, referred to as demand driven needs, the forecasts from **Chapter** 7 were used to determine the future need. Projects related to system indicator (SI) deficiencies do not have associated projects or financial needs as these are only informational. Estimated development costs resulting from recommended projects are aimed at closing the gap between these deficiencies and strengthening the overall performance of the system.

10.2.1. Cost Estimate Methodology

Projects in this chapter identify the “difference” between the airport’s current or existing condition and the needs to satisfy PMs, F&SOs, and/or future facility needs driven by aviation demand forecasts. For example, the 2020 CASP defines the facility and service objective for runway strength for GA-Local airports as 30,000 pounds for the primary runway. A GA-Local airport whose primary runway strength is only 25,000 pounds is considered deficient. The recommended project to bring this airport into compliance would be to strengthen the primary runway by at least 5,000 pounds to meet the objective. Each project’s cost, by airport, were recorded to identify system financial needs by goal category, PM, facility and service objective, future needs, and system total.

Of note, while Denver International Airport (DEN) was included throughout the CASP’s analysis, individual projects and project costs were not developed for DEN. Information from DEN on capital spending was obtained and is subsequently discussed to reflect a total statewide aviation system financial need, although DEN’s projects are not reflected in the cost tables presented in the next section.

Capital improvement plans (CIPs) were also gathered from available airport master plans and CDOT Division of Aeronautics’ 20-year CIPs. These projects were cross referenced with the 2020 CASP recommended projects to avoid duplication of financial needs. Any duplicative project costs were removed from CDOT CIP totals, however, CIP costs were presented in CASP airport-specific projects associated with the appropriate goal category, PM, or facility and service objective to be able to derive the total needs for each of these components.

Planning-level unit costs were developed based on 2019 Colorado material costs and industry knowledge and were tiered to reflect cost differentials between types and sizes of airports. The 2020 CASP airport classifications were used for this purpose. For example, a unit cost at a Denver-area GA-Regional airport may be less expensive than at a GA-Rural airport in southeastern Colorado. The unit costs were then multiplied by the necessary quantities (i.e. area, units, feet, etc.) of the proposed project to develop a cost estimate for that project. This planning-level exercise provides an order of magnitude estimate with some contingencies accounted for in the unit costs. More detailed project costs require additional analyses regarding the specific conditions found at each airport.

It is important to note that inclusion of a project in the 2020 CASP is for planning purposes only and does not convey a commitment of local, state, or federal funding for a project. Project justification through appropriate means is still required to support funding requests. Also relevant is the fact that financial needs are presented in 2020 dollars.

10.3. System Plan Project Costs by Goal Category

Total estimated costs in the following sections pertain to 2020 CASP projects identified to improve the system performance related to each PM organized by goal category. These projects are recommended to increase the existing performance to the target performance. Some projects do not have associated costs and are denoted accordingly under each PM. Costs for recommended projects that satisfy both a PM and an existing facility and service objective are marked with an (*) in subsequent tables. For example, the PM "Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building" overlaps with the facility and service objective for maintenance/SRE building. Costs for these projects are shown twice in the costs: once under the applicable PM and once under the applicable facility and service objective. However, overlapping costs are not duplicated for total system needs. As previously stated above, individual projects and subsequent project costs were not developed for DEN in this section.

10.3.1. Safety and Efficiency Goal

Table 10.2 presents the costs for projects under the Safety and Efficiency goal by PM. The following PMs do not have an associated project cost:

- **Percent of Airports with Approaches Negatively Impacted by Obstructions** – The analysis focused on the controlling obstruction affecting the approach slope. Improving the approach slope could require multiple obstructions being lighted, trimmed, or removed. The costs vary substantially by airport and sufficient information was not available to derive a useful estimate.
- **Percent of Airports that Have Adopted Land Use/Height Controls**. There is no direct project cost associated with promoting and implementing land use/height controls.
- **Percent of NPIAS Airports that Meet Current FAA Design Standards Under AC 150/5300-13A**. The analysis identified taxiway geometry and RSA deficiencies, however, given the range of potential solutions to address these deficiencies at each airport, a project cost was not developed.

The cost estimate for safety and efficiency projects total $12,162,000, reflecting only projects to address the PM for full perimeter wildlife fencing. The full cost of mitigating obstructions and addressing taxiway geometry and RSA improvements would substantially increase this goal's costs.

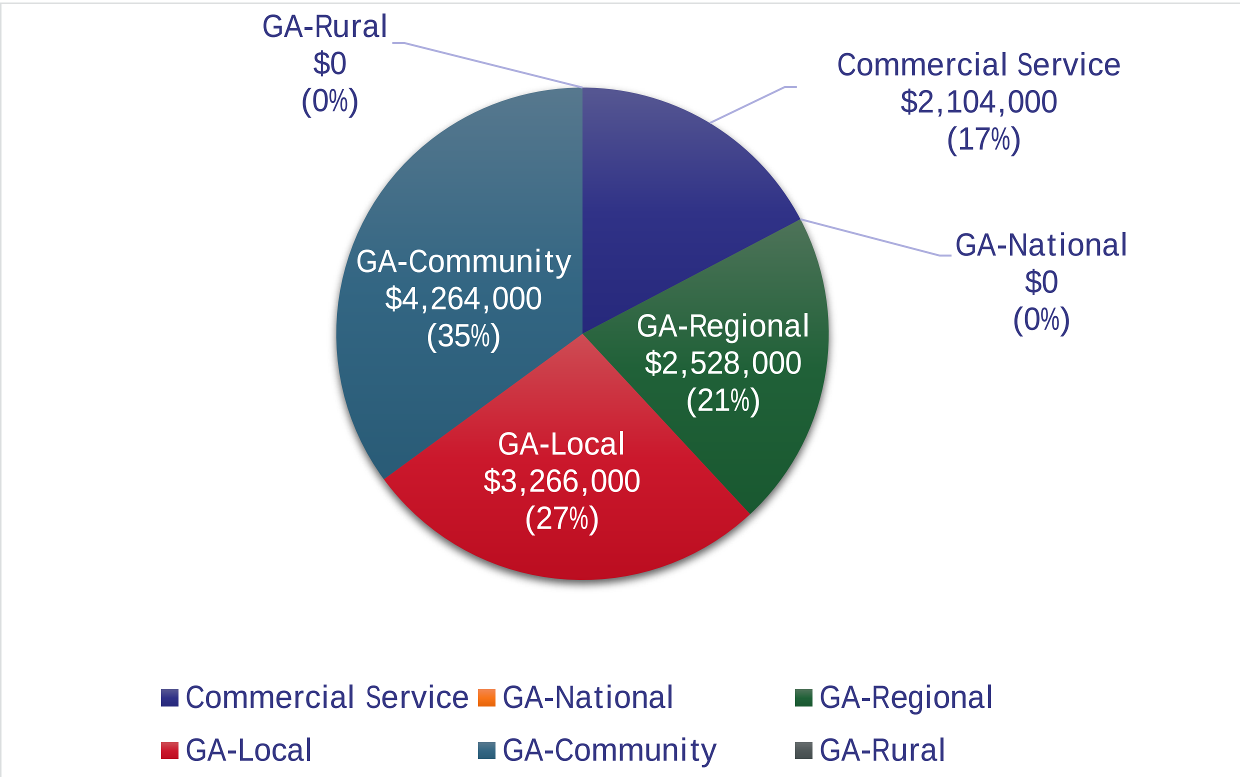
Table 10.2. Safety and Efficiency Goal: Project Costs by PM

2020 CASP Performance Measure		2018 Performance	Future Performance Target	Total Estimated Cost	% of Total
Percent of Airports with Approaches Negatively Impacted by Obstructions		35%	0%	No cost developed	0%
Percent of Airports that Have Full Perimeter Wildlife Fencing		49%	85%	$12,162,000	100%
Percent of Airports that Have Adopted Land Use/Height Controls	*Land Use*	62%	100%	No cost developed	0%
	Height	58%	100%	No cost developed	0%
Percent of NPIAS Airports that Meet Current FAA Design Standards Under AC 150/5300-13A	*Taxiway Geometry*	10%	100%	No cost developed	0%
	RSA Standards	78%	100%	No cost developed	0%
			Total Costs	**$12,162,000**	**100%**

Sources: 2018 Inventory & Data Form, Kimley-Horn, 2020

Project costs under the Safety and Efficiency goal are broken out by airport classification in **Figure 10.2.** There are no project costs for GA-National and GA-Rural airports as these airports' existing conditions currently satisfy the future performance targets for full perimeter wildlife fencing. GA-Community has the largest portion of costs at nearly $4.3 million (35 percent). GA-Local, GA-Regional, and Commercial Service follow at 27 percent, 21 percent, and 17 percent, respectively.

Figure 10.2. Safety and Efficiency Goal: Project Costs by Airport Classification



Source: Kimley-Horn, 2020

10.3.2. Access and Mobility Goal

Table 10.3 presents the project costs for the Access and Mobility goal by PM. All costs for PMs in this goal, except for GA terminal building needs, overlap with needs based on F&SOs. Project costs incurred by the PM "Percent of population within a 30-minute drive time of an all-weather runway" are for improvements to install on-site weather reporting and/or implementing instrument approach procedures (IAP) at airports as determined by their F&SOs. The majority of costs are related to commercial service terminal building needs (over $105 million) and additional transient hangar space needs (almost $95 million). Costs associated with meeting access and mobility goal PMs are nearly $221 million.

Table 10.3. Access and Mobility Goal: Project Costs by PM

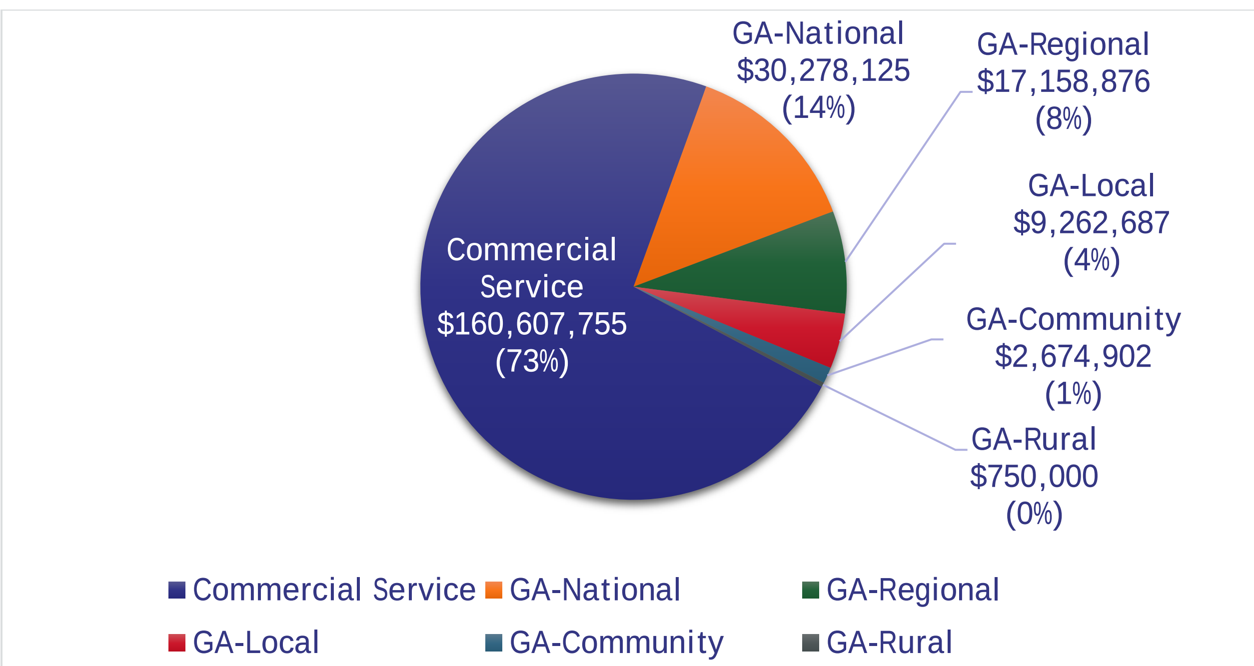
2020 CASP Performance Measure		2018 Performance	Future Performance Target	Total Estimated Cost	% of Total
Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building*		44%	61%	$9,931,668	4%
Percent of Population within a 30-Minute Drive Time of an All-Weather Runway*		83%	85%	$4,572,777	2%
Percent of Airports with Adequate Terminal Capacity	*Commercial Service Terminal**	29%	100%	$105,152,280	40%
	General Aviation Terminal	58%	100%	$6,572,163	2%
Percent of Airports with Adequate Transient Hangar Spaces*		44%	61%	$94,503,457	52%
			Total Costs	**$220,732,345**	**100%**

**Note: PM costs overlap with applicable F&SO costs.*

Sources: 2018 Inventory & Data Form; FAA Form 5010 Master Record; Kimley-Horn, 2019

The $221 million in recommended projects for the Access and Mobility goal is broken out by airport classification in **Figure 10.3.** Commercial Service airports comprise almost three-quarters of the total project costs for this goal category.

Figure 10.3. Access and Mobility Goal: Project Costs by Airport Classification



Note: Percentages are rounded to nearest whole number.

Source: Kimley-Horn, 2020

10.3.3. Economic Sustainability Goal

Table 10.4 presents a summary of system performance and future targets for the three PMs associated with the Economic Sustainability goal. As shown, costs were not developed for projects related to either the fuel types or utilities, and no target was established for airports to support the aerospace manufacturing, technology and/or testing industry. The PM for fuel specifically pertains to the fuel services provided at the airport (full-service by FBO or 24/7 self-serve) as defined by the F&SOs. No costs are associated with providing fuel services in this PM. For the utilities PM, costs are dependent on multiple factors such as the location where development is needed compared to proximity to existing utilities and even the capacity of utilities. As such, accurate cost estimates could not be developed for each airport.

Table 10.4. Economic Sustainability Goal: Project Costs by PM

2020 CASP Performance Measure	2018 Performance	Future Performance Target	Total Estimated Cost	% of Total
Percent of Airports with Necessary Fuel Type, Available 24/7*	94%	100%	No cost developed	0%
Percent of Airports that Support the Aerospace Manufacturing, Technology and/or Testing Industry	36%	No Target Established	N/A	0%
Percent of Airports with Adequate Utilities	53%	85%	No cost developed	0%
		Total Costs	**$0**	**0%**

Sources: 2018 Inventory & Data Form; Kimley-Horn, 2019

10.3.4. System Viability Goal

Project costs related to PMs for the System Viability goal are shown in **Table 10.5**. The costs of recommended projects are estimated at nearly $61 million for two of the three PMs, with no cost identified for the adoption of a pavement maintenance program (PMP). The PM "Percent of Airports with Certified On-Site Weather Reporting (AWOS or ASOS)" overlaps with the facility and service objective for weather reporting, therefore this cost is duplicative, representing nearly $1.8 million or three percent of the System Viability total cost. The most significant cost is achieving the target performance for airports having an average runway and taxiway PCI of 70 or greater. This cost of over $59 million represents 97 percent of the total System Viability Goal cost. This PM is widely considered to be one of the most critical of the CASP as maintaining the system airports' pavements in good condition is essential to the system's long-term viability.

Table 10.5. System Viability Goal: Project Costs by PM

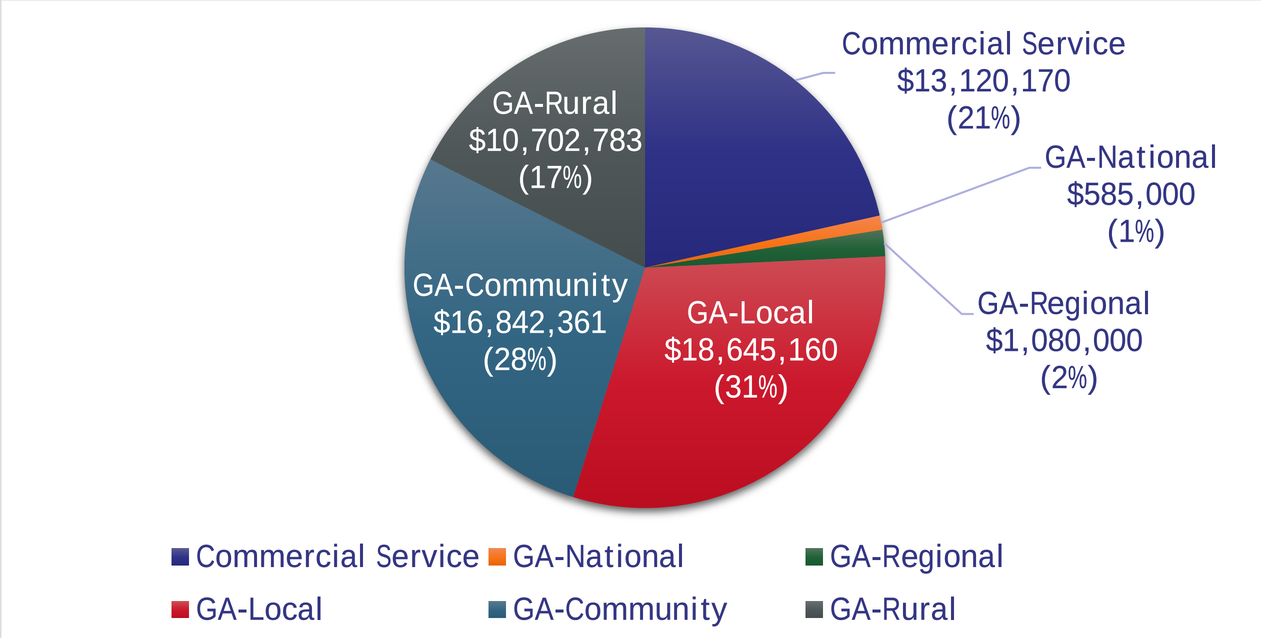
2020 CASP Performance Measure	2018 Performance	Future Performance Target	Total Estimated Cost	% of Total
Percent of Airports with Certified On-Site Weather Reporting (AWOS or ASOS)*	77%	85%	$1,777,777	3%
Percent of Airports with Pavement Maintenance Programs	64%	95%	No cost developed	0%
Percent of Airports with an Average Runway and Taxiway Pavement Condition Index (PCI) of 70 or Greater	47%	95%	$59,197,697	97%
		Total Costs	**$60,975,474**	**100%**

**Note: PM costs overlap with applicable F&SO costs.*

Sources: CDOT Division of Aeronautics Pavement Evaluation and Management, 2018; 2018 Inventory & Data Form; Kimley-Horn, 2020

Figure 10.4 shows the costs of projects under the System Viability goal broken out by airport classification. Of the nearly $61 million in project costs, GA-Local airports make up almost one-third of these costs at almost $19 million, with GA-Community following closely behind with nearly $17 million (28 percent), and Commercial Service with over $13 million in needs (21 percent). GA-Rural, GA-Regional, and GA-National airports follow with 17 percent, two percent, and one percent, respectively.

Figure 10.4. System Viability: Project Costs by Airport Classification



Source: Kimley-Horn, 2019

10.3.5. Total Project Costs by Goal Category

Table 10.6 presents the total development costs to meet all future performance targets set for PMs by goal category.

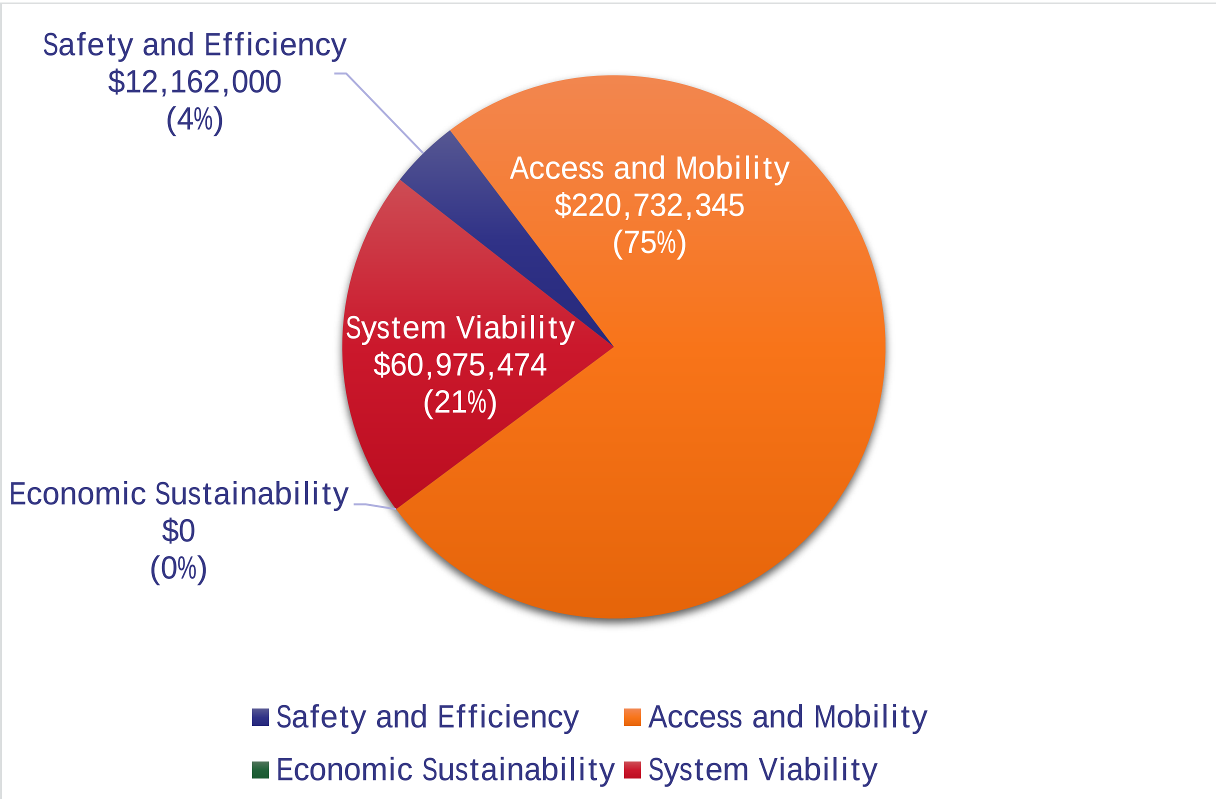
Table 10.6. Total Project Costs by Goal Category

2020 CASP Goal Category	Total Estimated Cost	% of Total
Safety and Efficiency	$12,162,000	4%
Access and Mobility	$220,732,345	75%
Economic Sustainability	$0	0%
System Viability	$60,975,474	21%
Total Project Costs	$293,869,818	100%

Source: Kimley-Horn, 2020

Figure 10.5 graphically displays the results. The total PM system cost is estimated at $293.8 million. Costs related to meeting PMs in the Access and Mobility goal make up 75 percent of these costs. System Viability and Safety and Efficiency goals comprise roughly 21 percent and four percent of total costs, respectively. No costs were established for the Economic Sustainability goal as there were no future targets, no associated project costs, and costs were not developed for the PMs**.**

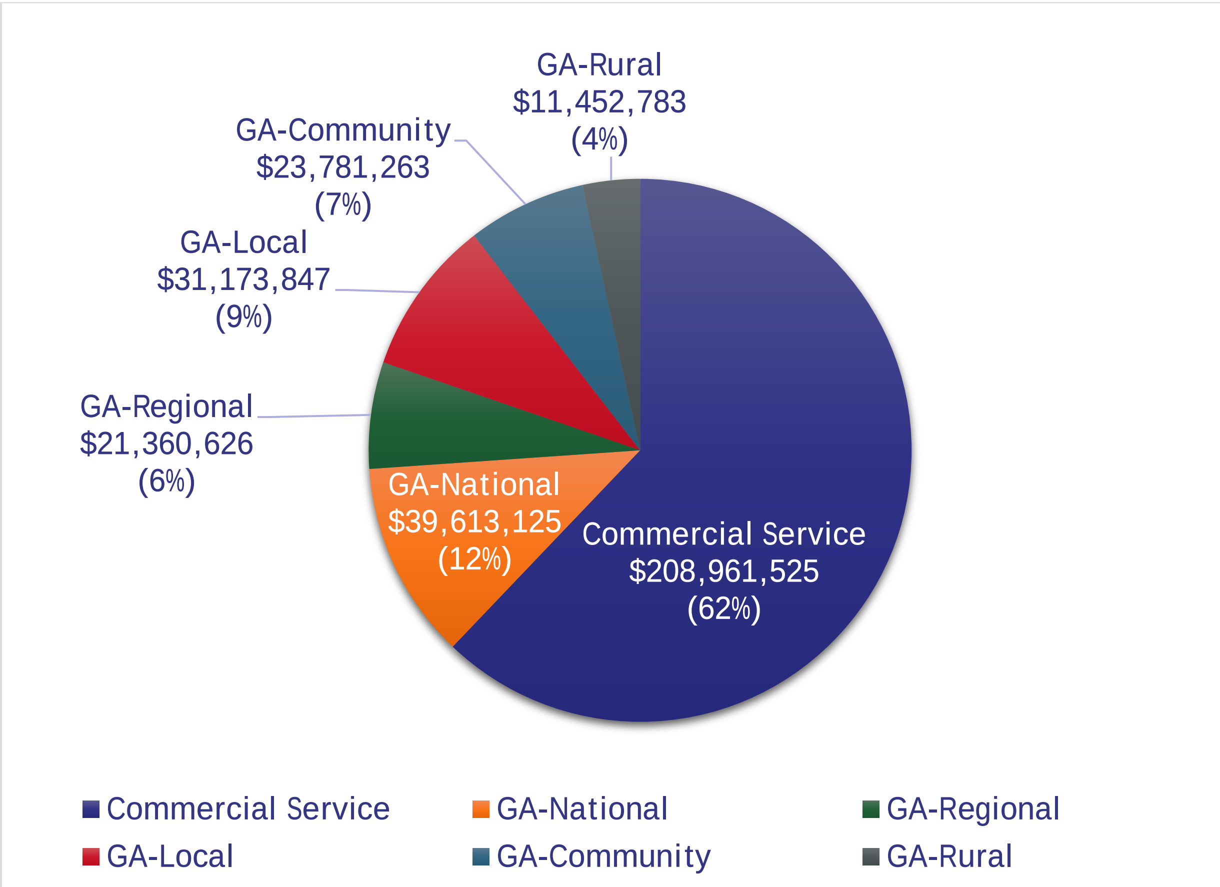
Figure 10.5. Total Project Costs by Goal Category



Source: Kimley-Horn, 2020

Figure 10.6 presents the total costs organized by airport classification**.** The distribution of project costs is more widespread amongst airport classifications than by goal category. Project costs for Commercial Service airports comprise the largest portion at 62 percent and nearly $209 million, compared to only four percent of costs at GA-Rural airports at more than $11 million.

Figure 10.6. Total Project Costs by Airport Classification



Source: Kimley-Horn, 2020

10.4. System Plan Project Costs by Facility & Service Objective

This section examines costs for airports that did not meet the F&SOs identified for their airport classification. As previously discussed, projects and project costs relating to F&SOs were not developed for DEN. Additionally, project costs which have overlapping PMs and F&SOs are denoted with an (*) in subsequent tables, as appropriate**.**

10.4.1. Airfield Facility Objectives

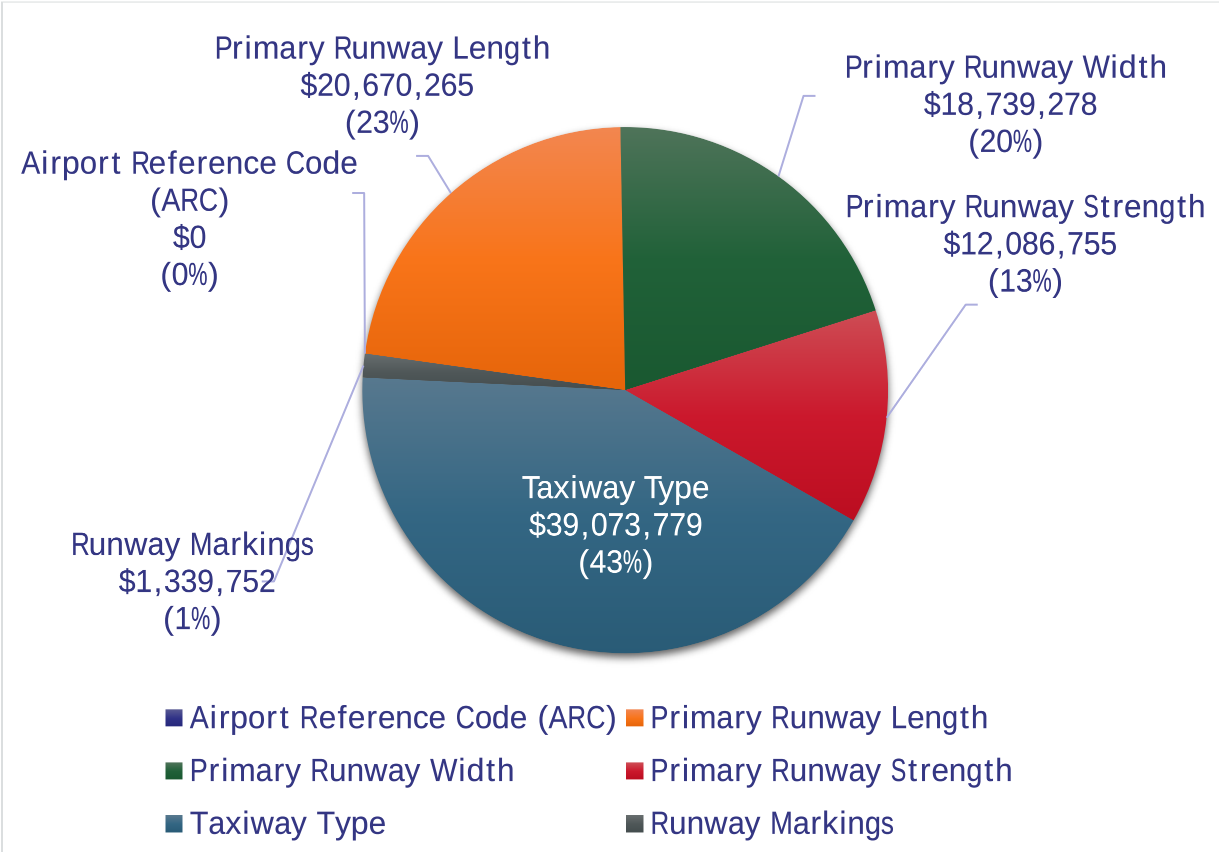
Project costs related to airfield facility objectives are shown in **Table 10.7** and **Figure 10.7.** The total cost for airports to meet airfield facility objectives amounts to nearly $92 million. Recommended projects for airports to achieve the taxiway objective are estimated at over $39 million which comprises almost half of total airfield facility objective costs. Primary runway length projects make up roughly one-quarter of these costs at over $20 million. No costs were prepared for projects related to airport's meeting the airport reference code (ARC). These projects would consist of a variety of elements such as runway to taxiway separation and safety areas that are associated with airports changing their ARC and the associated runway design code (RDC) for the primary runway. These costs are specific to each airport's situation and therefore are not presented in the CASP.

Table 10.7. Airfield Facility Project Costs by Objective

Facility and Service Objective	Total Estimated Cost	% of Total
Airport Reference Code (ARC)	No cost developed	0%
Primary Runway Length	$20,670,265	23%
Primary Runway Width	$18,739,278	20%
Primary Runway Strength	$12,086,755	13%
Taxiway Type	$39,073,779	43%
Runway Markings	$1,339,752	1%
Total F&SO Recommendations Costs	**$91,909,828**	**100%**

Source: Kimley-Horn, 2020

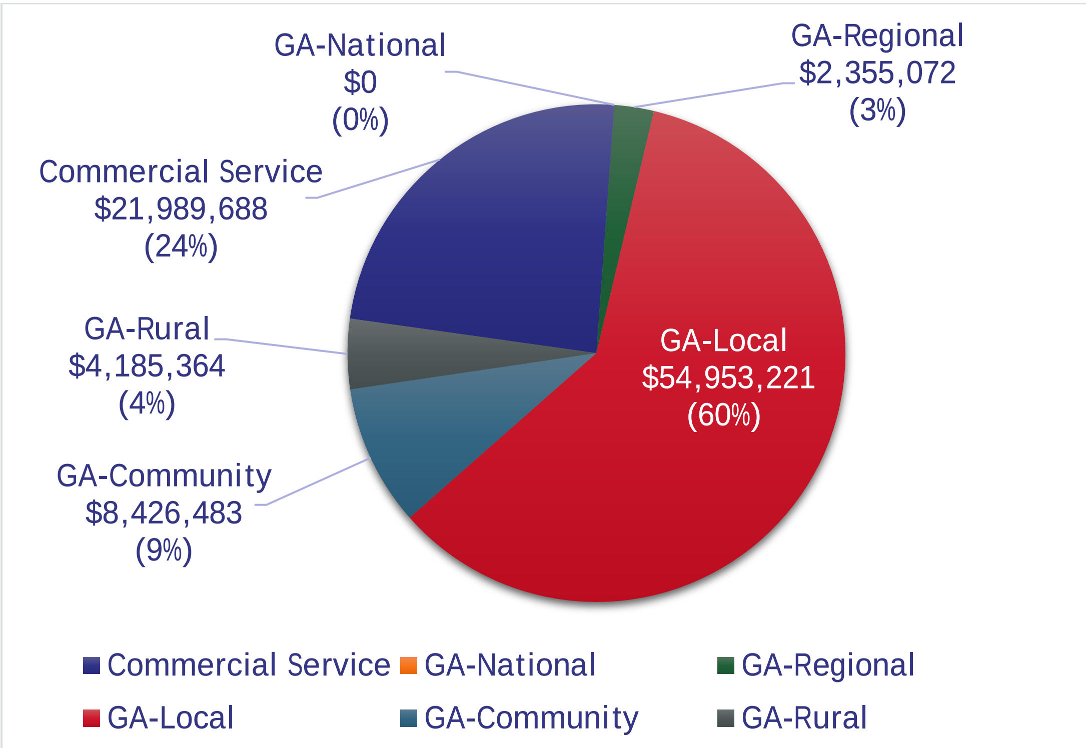
Figure 10.7. Airfield Facility Project Costs by Objective



Source: Kimley-Horn, 2020

Figure 10.8 shows the airfield facility project costs categorized by airport role. GA-Local airports comprise 60 percent of the project costs with almost $55 million, while Commercial Service airports comprise 24 percent with nearly $22 million in airfield facility project costs. The other airport classifications making up smaller proportions of the total recommended airfield facility project costs.

Figure 10.8. Airfield Facility Project Costs by Airport Role



Source: Kimley-Horn, 2020

10.4.2. Lighting/NAVAIDs Facility Objectives

Lighting/NAVAIDs project costs presented by objective in **Table 10.8** and the results are graphically depicted in **Figure 10.9.** Total project costs for lighting and NAVAID facility objectives are estimated at $6.6 million. Primary approach projects make up almost $3 million and equate to 42 percent of total lighting/NAVAIDs project costs. Project recommendations for primary approach and weather reporting share overlapping costs with PMs as denoted in **Table 10.8**.

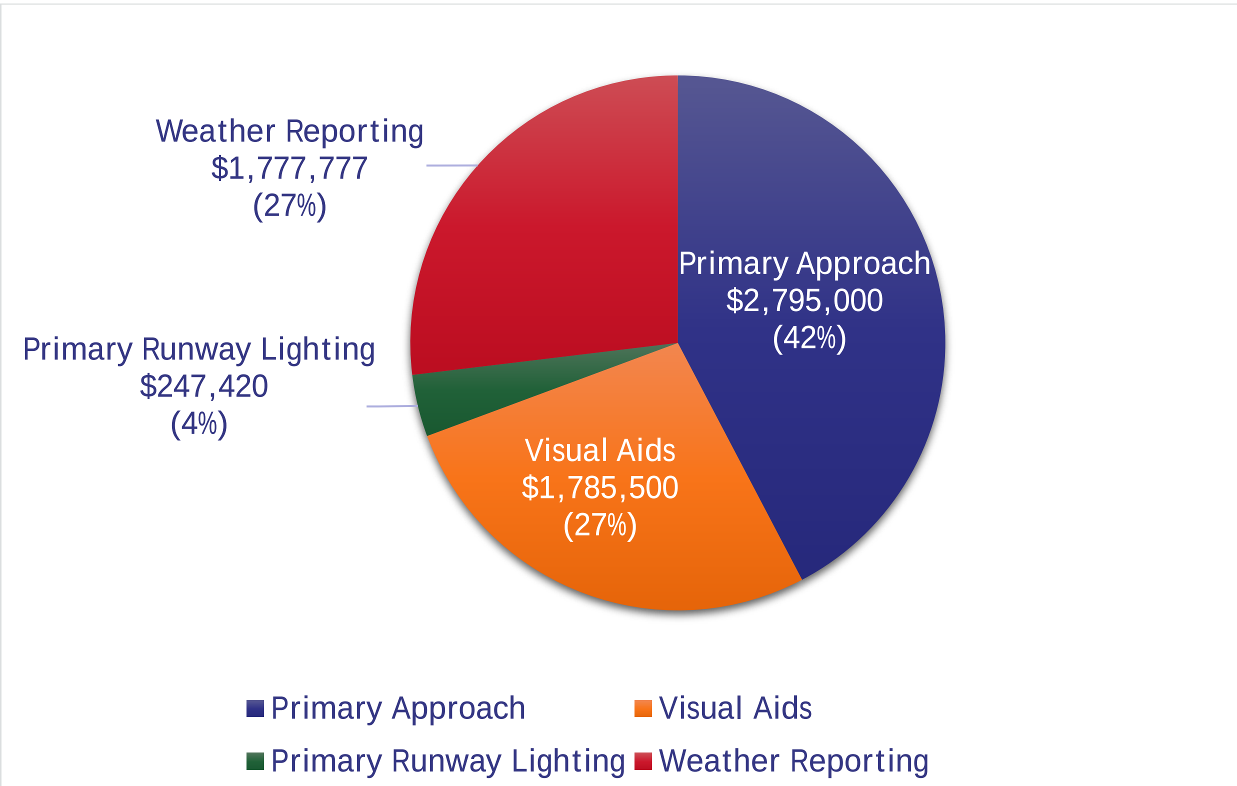
Table 10.8. Lighting/NAVAIDs Facility Project Costs by Objective

Facility and Service Objective	Total Estimated Cost	% of Total
Primary Approach*	$2,795,000	42%
Visual Aids	$1,785,500	27%
Primary Runway Lighting	$247,420	4%
Weather Reporting*	$1,777,777	27%
Total F&SO Recommendations Costs	**$6,605,697**	**100%**

**Note: Facility and service objective costs overlap with PM costs.*

Source: Kimley-Horn, 2020

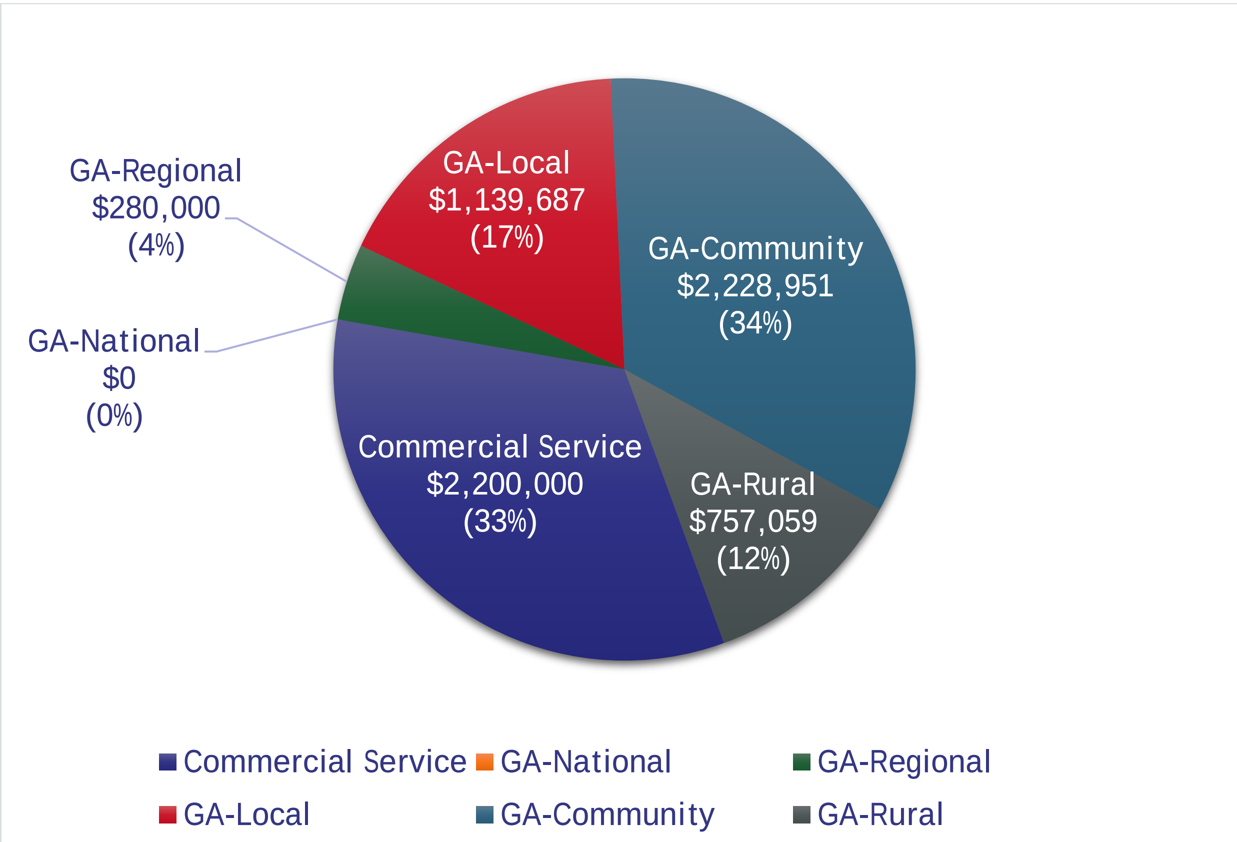
Figure 10.9. Lighting/NAVAIDs Facility Project Costs by Objective



Source: Kimley-Horn, 2020

Project costs for lighting/NAVAIDs projects are broken down by airport classification as shown in **Figure 10.10.** Commercial Service and GA-Community airport classifications' costs make up a combined total of $4.4 million and equal 67 percent of project costs. There are no project costs for GA-National airports.

Figure 10.10. Lighting/NAVAIDs Facility Project Costs by Airport Classification



Source: Kimley-Horn, 2020

10.4.3. Airport Facility Objectives

Table 10.9 and **Figure 10.11** show project costs for projects focused on meeting other airport facility objectives. The total project costs for these airport facility objectives are over $259 million. Projects related to increasing airport aircraft storage (hangars and apron tie-downs) make up more than half (52 percent) of these project costs at over $132 million. Projects to increase commercial service terminal capacity comprise the second largest proportion of project costs at 40 percent and $105 million dollars. There are three F&SOs that overlap with existing PMs: terminal capacity (commercial service only), hangars, and maintenance/SRE storage buildings. It should be noted that recommended projects in this section are specifically driven by 2018 needs to meet these F&SOs. **Section 10.5 Future Facility Project Costs** defines the costs of system facility needs based on 2038 aviation demand forecasts from **Chapter 7.**

Table 10.9. Airport Facility Project Costs by Objective

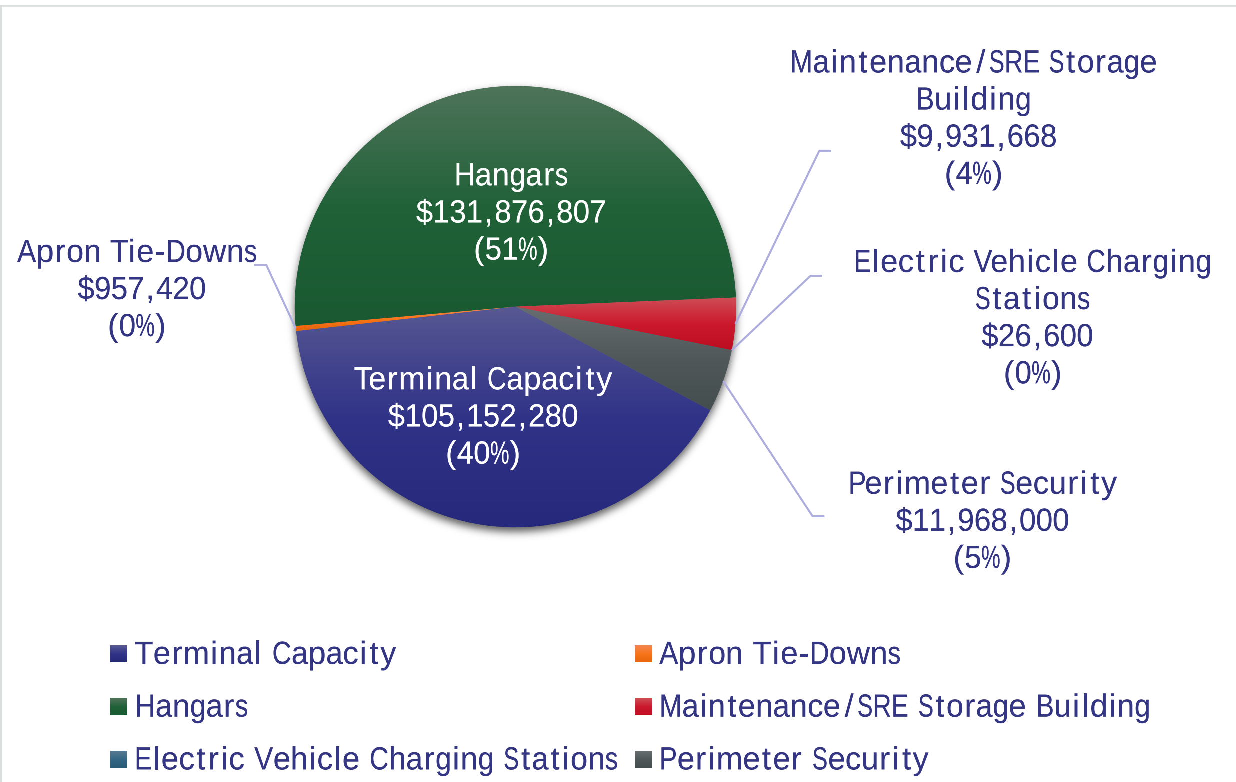
Facility and Service Objective	Total Estimated Cost	% of Total
Terminal Capacity* (Commercial Service only)	$105,152,280	40%
Apron Tie-Downs	$957,420	0%**
Hangars*	$131,876,807	52%
Maintenance/SRE Storage Building*	$9,931,668	4%
Electric Vehicle Charging Stations	$26,600	0%**
Perimeter Security	$11,968,000	4%
Total F&SO Recommendations Costs	**$259,912,775**	**100%**

**Note: Facility and service objective costs overlap with PM costs.*

***Note: Percentages are rounded to nearest whole number.*

Source: Kimley-Horn, 2020

Figure 10.11. Airport Facility Costs by Objective

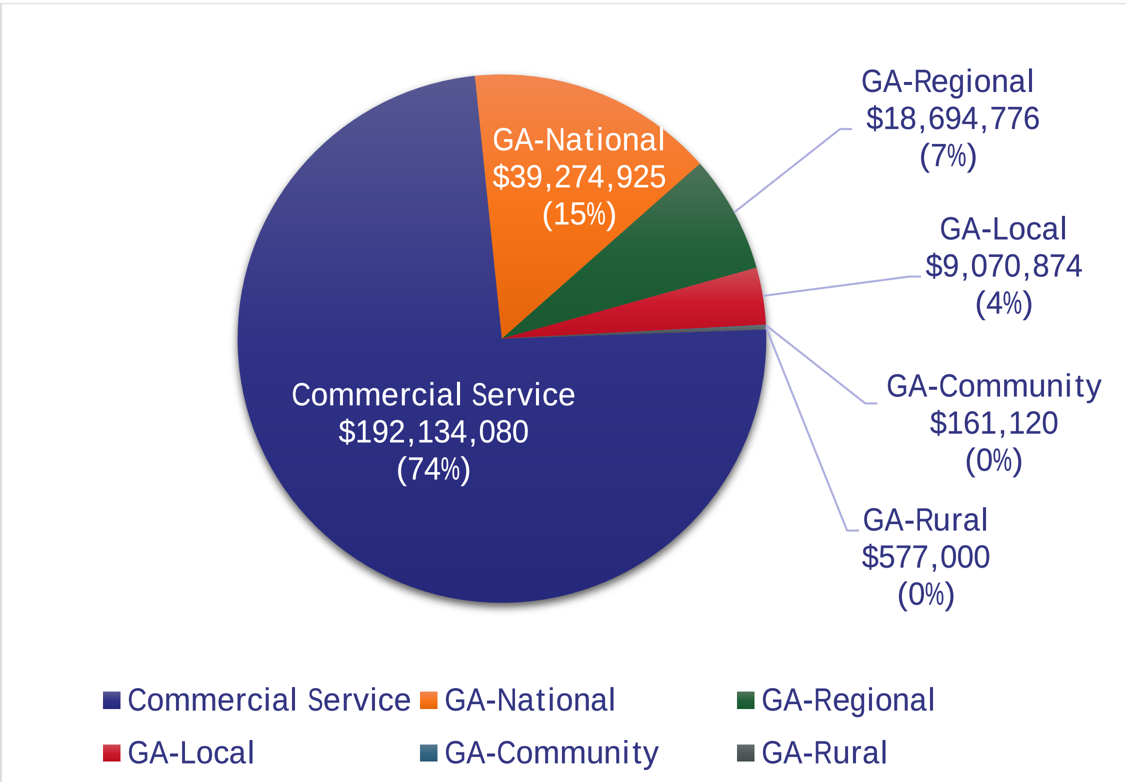


Note: Percentages are rounded to nearest whole number.

Source: Kimley-Horn, 2020

Recommended development costs for airport facility objectives are organized by airport classification and presented in **Figure 10.12**. Commercial Service airports comprise three-quarters of the costs at almost $200 million. A large proportion of these costs are due to the need for additional aircraft storage in relation to the volume of based and transient aircraft frequenting these airports.

Figure 10.12. Airport Facility Project Costs by Airport Classification



Note: Percentages are rounded to nearest whole number.
Source: Kimley-Horn, 2020

10.4.4. Services/Other Objectives

The project costs to meet services/other objectives are shown in **Table 10.10**. Development costs to meet these objectives amount to almost $50 million. Jet A and AvGas fuel objectives focus specifically on fueling services (e.g., full service by an FBO or 24/7 self-service) provided at the facility. Fuel service does not have a direct cost. Additionally, no costs were developed for sustainability plan projects since CDOT Division of Aeronautics has developed a sustainability plan template that 2020 CASP airports can use without a fee.

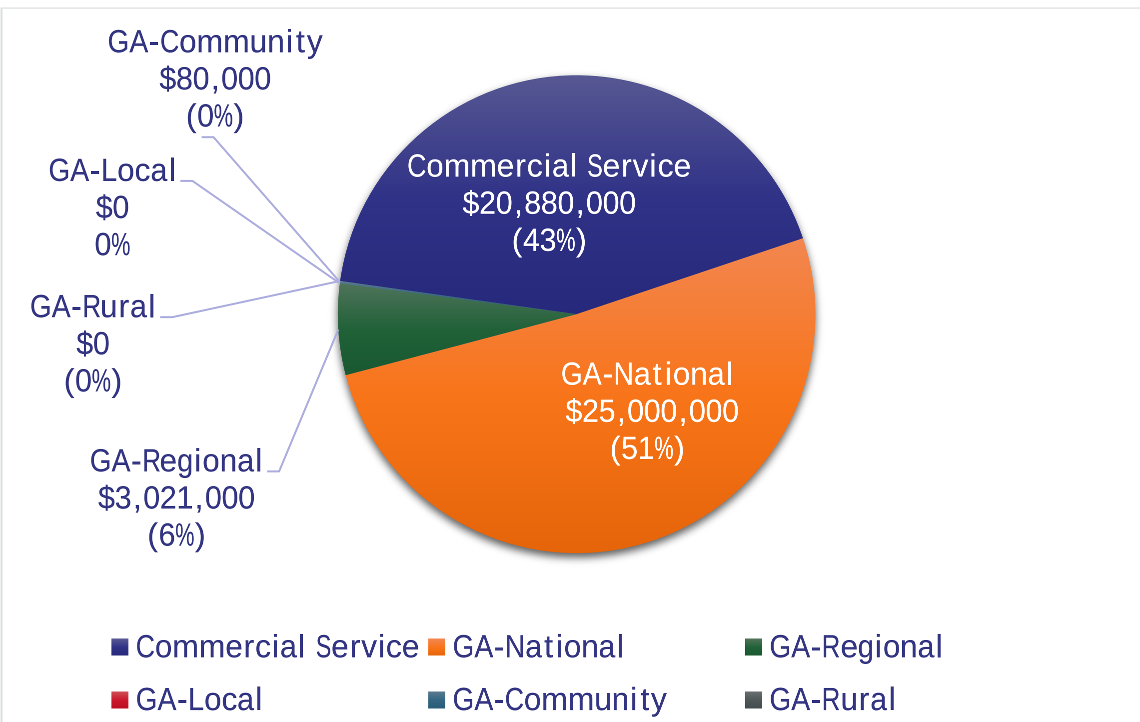
Table 10.10. Services/Other Project Costs by Objective

Facility and Service Objective	Total Estimated Cost	% of Total
Jet A Fuel	No cost developed	0%
AvGas Fuel	No cost developed	0%
Aircraft De-Icing	$48,851,000	100%
Courtesy Car	$130,000	0%**
Sustainability Plan	No cost developed	0%
Total F&SO Recommendations Costs	**$48,981,000**	**100%**

***Note: Percentages are rounded to nearest whole number.*
Source: Kimley-Horn, 2020

Recommended project costs for services/other objectives are categorized by airport classification in **Figure 10.13.** The majority of costs are split between GA-National (51 percent and $25 million) and Commercial Service (43 percent and nearly $21 million) with a combined total of almost $46 million. The remaining six percent of costs are related to projects at GA-Regional and GA-Community airports, with a combined cost of $3.1 million. GA-Local and GA-Rural airports did not have any projects to meet the F&SOs in this category and therefore do not have project costs.

Figure 10.13. Services/Other Project Costs by Airport Classification



Note: Percentages are rounded to nearest whole number.
Source: Kimley-Horn, 2020

10.4.5. Summary

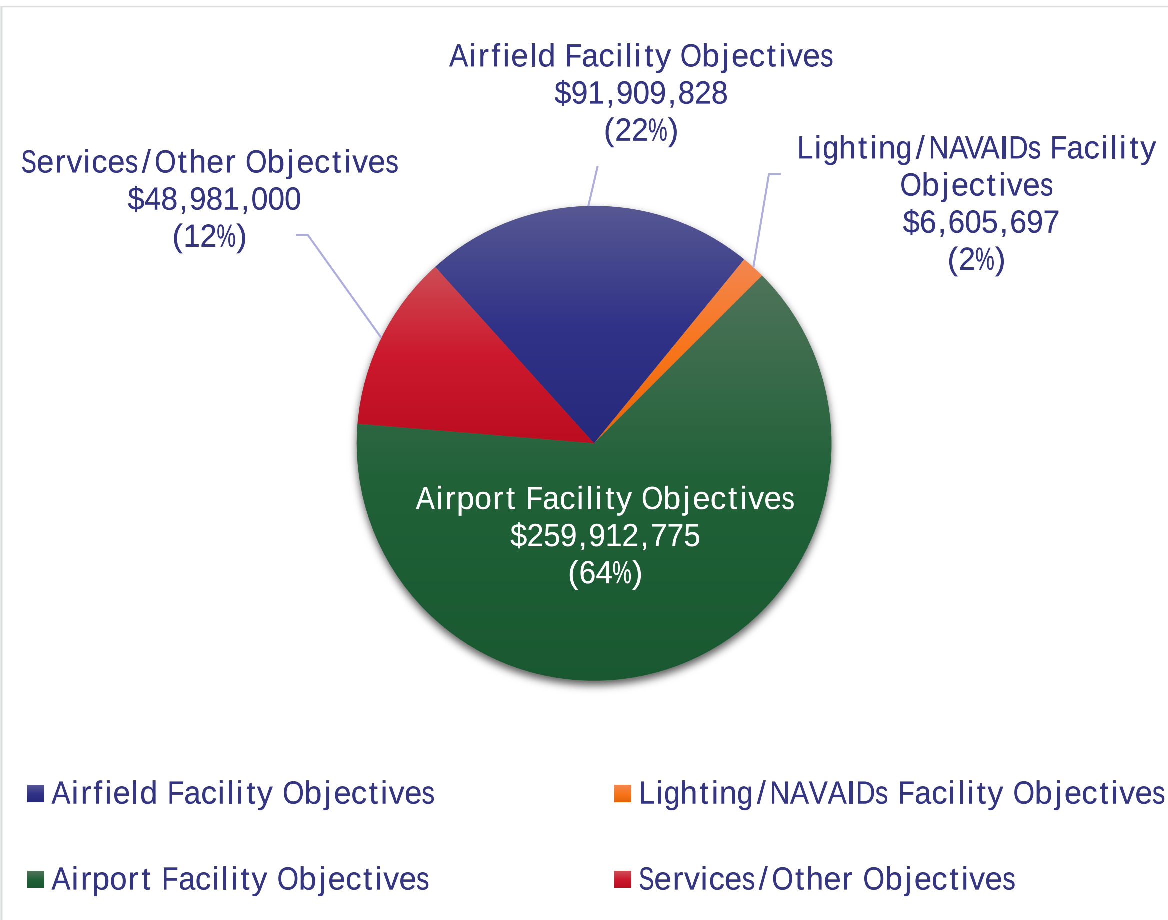
The total recommended development costs to meet all F&SOs are shown by objective category in **Table 10.11** and **Figure 10.14**. The total cost for all system airports to meet the associated classification F&SOs is estimated to be over $407 million. Most of these costs pertain to projects related to airport facility objectives, which include hangars and terminal needs. This category of objectives represents 64 percent of total recommended facility and service objective projects.

Table 10.11. Total Project Costs by Facility and Service Objective Category

Facility and Service Objective	Total Estimated Cost	% of Total
Airfield Facility Objectives	$91,909,828	22%
Lighting/NAVAIDs Facility Objectives	$6,605,697	2%
Airport Facility Objectives	$259,912,775	64%
Services/Other Objectives	$48,981,000	12%
Total F&SO Recommendations Costs	**$407,409,300**	**100%**

Source: Kimley-Horn, 2020

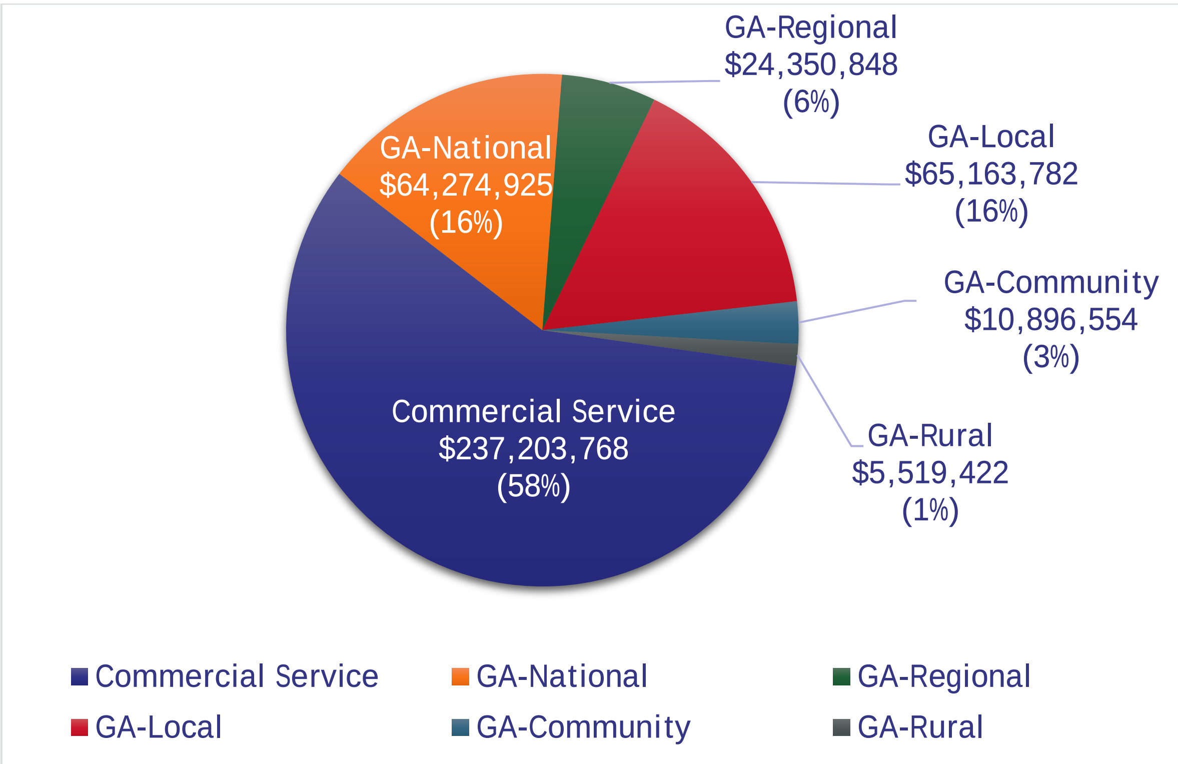
Figure 10.14. Total Project Costs by Facility and Service Objective Category



Source: Kimley-Horn, 2020

Figure 10.15. shows the total costs of the recommended projects to meet all F&SOs organized by airport classification. Commercial Service airports comprise the bulk of total project costs with an estimated $237 million and 58 percent of total costs. Remaining airport classifications make up smaller and smaller proportions of the total project costs with GA-Rural comprising roughly one percent.

Figure 10.15. Total Project Costs for F&SOs by Airport Classification



Note: Percentages are rounded to nearest whole number.
Source: Kimley-Horn, 2020

10.5. Future Facility Project Costs

As part of the analysis completed in **Chapter 8. Future System Performance,** forecasts for aircraft operations and based aircraft were utilized to determine additional facility needs to accommodate anticipated demand in 2038. This analysis addresses those facilities that will need expansion beyond what was identified in the prior section based on increases in activity over the next 20 years. Future facility needs were evaluated for GA terminal capacity, apron tie-downs, and hangar spaces.

Costs for these facilities were obtained by evaluating the difference between 2018 objectives and 2038 needs. For example, an airport may be deficient in meeting its 2018 objective by 10 apron tie-down spaces and, when 2038 based aircraft are considered, this increases to 25 tie-downs. If the airport were to develop 10 apron tie-downs to meet 2018 objectives, then it would also need to develop an additional 15 tie-downs to meet 2038 needs. The development costs for the additional 15 tie-downs are presented in this section along with other future needs using this same methodology.

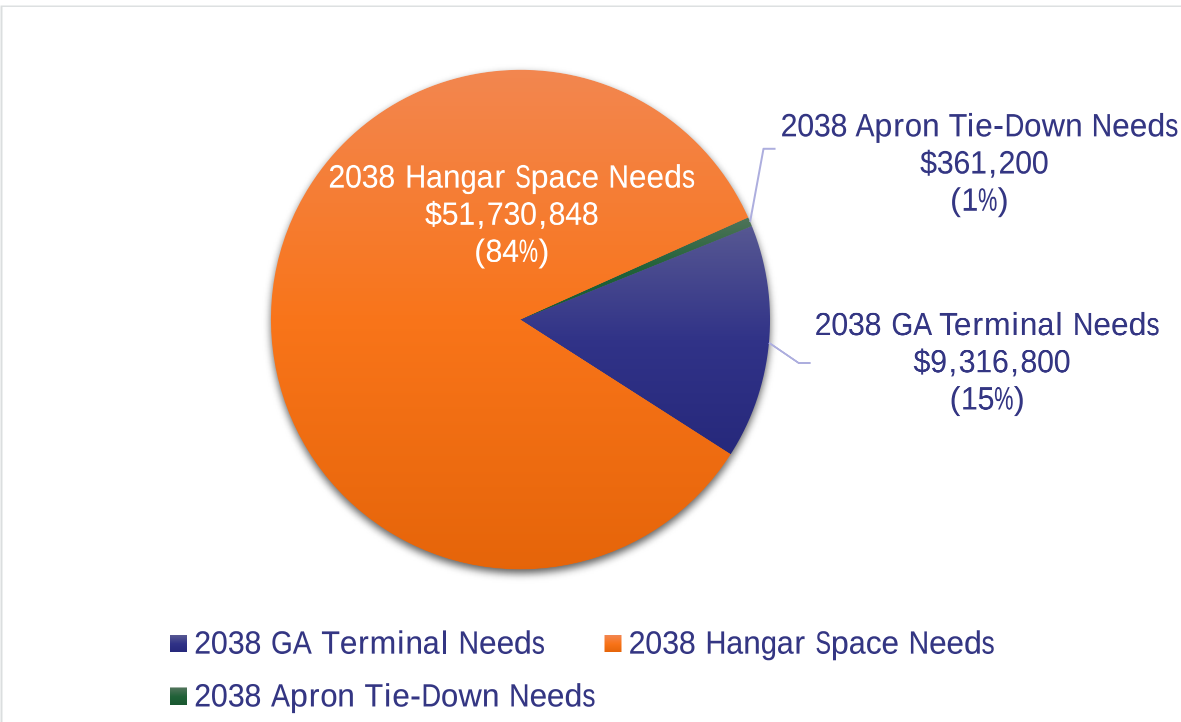
Estimated development costs for future facility needs based on 2038 demand are shown in **Table 10.12**, **Figure 10.16,** and **Figure 10.17** present the total future facility costs by type of project and airport classification, respectively.

Table 10.12. Total Future Facility Project Costs

Future Facility Needs	Total Estimated Cost	% of Total
2038 GA Terminal Costs	$9,316,800	15%
2038 Hangar Space Costs	$51,730,848	84%
2038 Apron Tie-Down Costs	$361,200	1%
Total Future Facility Needs Costs	**$61,408,848**	**100%**

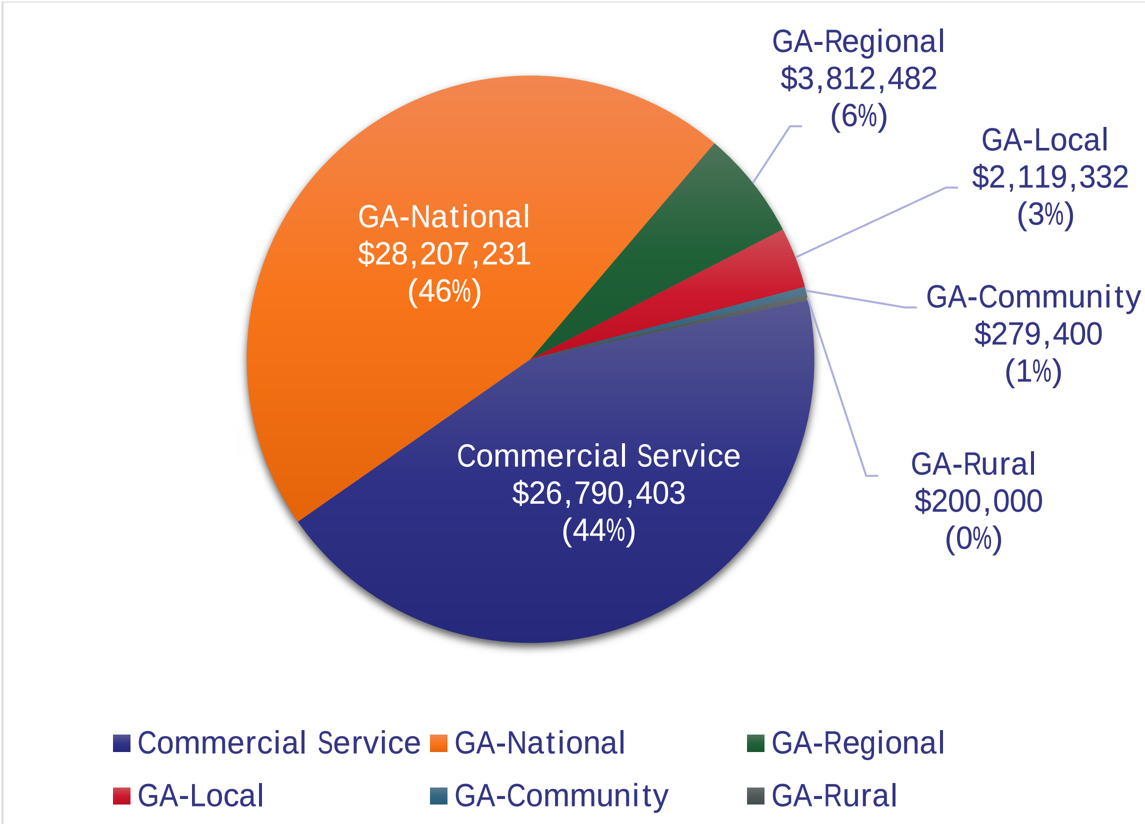
Source: Kimley-Horn, 2020

Figure 10.16. Total Future Facility Project Costs by Type



Source: Kimley-Horn, 2020

Figure 10.17. Total Future Facility Project Costs by Airport Classification



Note: Percentages are rounded to nearest whole number.
Source: Kimley-Horn, 2020

10.6. Overlapping PM and F&SO Costs

Implementing projects that satisfy both PMs and F&SOs could significantly increase the performance of the system in a cost-effective manner. Overlapping costs are determined by identifying projects which serve a dual purpose in meeting both the requirements of a PM and a facility and service objective. There are currently four PMs whose recommended projects overlap with five F&SOs as shown in **Table 10.13**. Total overlapping project costs amount to over $234 million dollars. Almost half of the overlapping projects ($105 million) come from commercial service terminal capacity needs. To note, overlapping transient hangar space costs include needs driven by meeting both 2018 and 2038 demands.

Table 10.13. Total Overlapping PM and F&SO Project costs by PM

2020 CASP Performance Measure	Related Facility and Service Objective		Cost Estimate	% of Total
Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building	Dedicated Maintenance/SRE Building		$9,931,668	4%
Percent of Population within a 30-Minute Drive Time of an All-Weather Runway	Instrument Approach Type		$2,795,000	1%
	Weather Reporting		$1,777,777	1%
Percent of Airports with Adequate Terminal Capacity	Commercial Service Terminal Capacity		$105,152,280	45%
Percent of Airports with Adequate Transient Hangar Spaces	Transient Hangar Spaces	2018	$94,503,457	40%
		2038	$20,164,600	9%
Total Overlapping PM and F&SO Project Costs			**$234,324,782**	**100%**

Source: Kimley-Horn, 2020

10.7. Non-2020 CASP-Related Project Costs

Beyond recommended projects identified as part of the 2020 CASP, many airports complete annual exercises to appropriately plan and determine budgeting needs for CIP projects. On a long-term basis, the completion of airport master plans and airport layout plans (ALPs) with narratives assists in the identification of future projects to achieve individual airport goals and demands. Planning documents such as these serve as tools to assist the airport in planning, budgeting, and confirming justification for project funding for state and federal funds. CIPs identified in airport master plans are documented in CDOT Division of Aeronautics' statewide CIP which records cost estimates of CIPs identified between the years 2020-2024 and 2025-2040. Denver International (DEN) maintains their own list of projects; the costs of these projects through 2038 are estimated in the following section and presented separately from CDOT's CIP costs.

10.7.1. CDOT Division of Aeronautics CIPs

Projects identified as part of CDOT Division of Aeronautics' statewide CIP were reviewed to gain a broader understanding of total system needs and project costs over the next 20 years. Some CIP costs were identified as overlapping with a 2020 CASP project recommendation (PM or F&SO) and were removed for duplication. As shown in **Table 10.14** and **Figure 10.18**, all CIP projects were organized into broad project categories: airfield, landside, terminal, and planning. The total CDOT CIP project costs for the system are projected to be over $1.2 billion. Airfield projects include runway extensions, taxiway construction, and pavement rehabilitation and account for roughly 71 percent of total CIP costs. It should be noted that this number may be significantly higher since some cost estimates were not developed for the 2020 CASP.

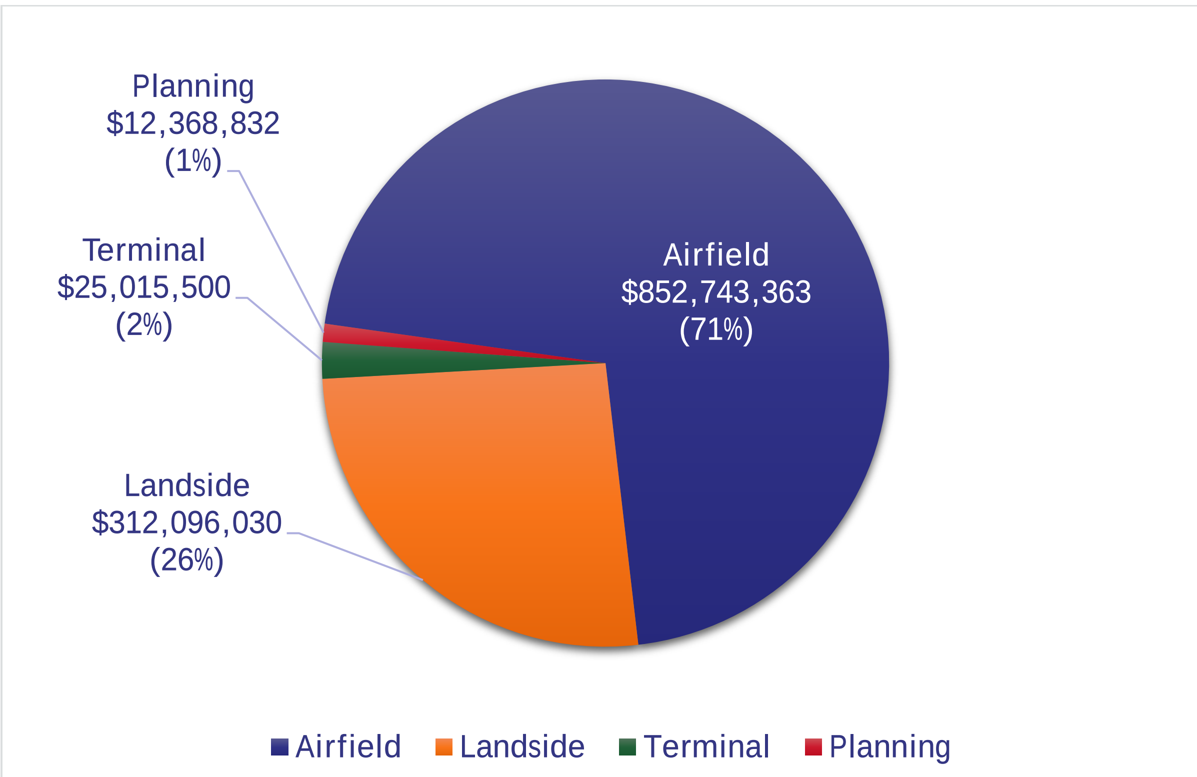
Table 10.14. Additional CDOT CIP Costs by Project Type

Project Type	Cost	% of Total
Airfield	$852,743,363	71%
Landside	$312,096,030	26%
Terminal	$25,015,500	2%
Planning	$12,368,832	1%
Total CDOT CIP Costs	**$1,202,223,725**	**100%**

***Note: Percentages are rounded to nearest whole number.*

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040, 2020

Figure 10.18. CDOT CIP Costs by Project Type

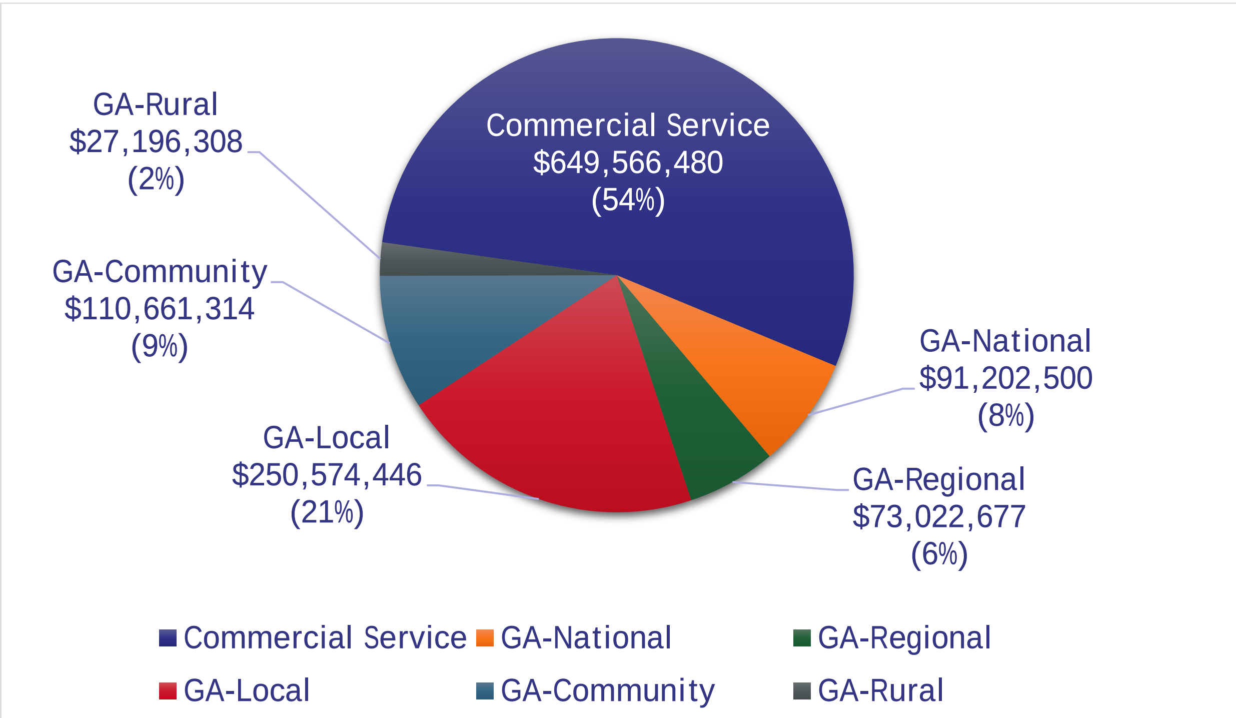


Note: Percentages are rounded to nearest whole number.

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040, 2020

Total CIP costs by airport classification are shown in **Figure 10.19** Projects at Commercial Service airports represent more than half of total statewide CIP costs at $649 million in estimated costs.

Figure 10.19. CDOT CIP Costs by Airport Classification



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040, 2020

10.7.2. Denver International CIP

DEN's publicly disclosed CIP, including associated costs was obtained from the DEN 2018-2022 Capital Program. The document groups projects and organizes by broad project category as presented in **Table 10.15**. DEN anticipates CIP projects of over $3.4 billion dollars over the 4-year timespan. More than half of the anticipated CIP costs are focused on projects related to Concourses A, B, and C. It is important to note that information derived from the 2018-2022 Capital Program is subject to future re-evaluation of projects due to potential impacts caused by COVID-19.

Table 10.15. 2018-2022 DEN CIP Costs

Project Type	Cost	% of Total
Concourses A, B, C	$1,800,000,000	53%
Jeppesen Terminal	$1,100,000,000	32%
Airside	$300,000,000	9%
Landside	$200,000,000	6%
2018-2022 DEN CIP Total Costs	**$3,400,000,000**	**100%**

Source: Denver International Airport 2018-2022 Capital Program, 2019

To obtain DEN's CIP costs through the remainder of the planning horizon (2023-2038), DEN's capital expenditures for fiscal year (FY) 2015 through FY 2018 were used to calculate an average yearly expenditure by project category as shown in **Table 10.16**. These expenditures were assumed to reflect likely future expenditures and are used to estimate potential future expenditures.

Table 10.16. DEN Average CIP Costs (FY 2015- FY 2018)

Project Type	Cost	% of Total
Concourses A, B, C	$32,307,000	13%
Jeppesen Terminal/ "Great Hall"	$130,055,000	53%
Airside	$56,738,000	23%
Landside	$28,312,000	11%
Average DEN CIP Total Costs	**$247,412,000**	**100%**

Source: Denver International Airport, 2019

The above averages by project type were then multiplied by 16 years to obtain cost estimates for 2023 through 2038. **Table 10.17** shows DEN's CIP cost estimates for 2023-2038 organized by project category.

Table 10.17. 2023-2038 Estimated DEN CIP Cost

Project Type	Cost	% of Total
Concourses A, B, C	$516,912,000	13%
Jeppesen Terminal/ "Great Hall"	$2,080,880,000	53%
Airside	$907,808,000	23%
Landside	$452,992,000	11%
2023-2038 DEN CIP Total Costs	**$3,958,592,000**	**100%**

Source: Denver International Airport 2018-2022 Capital Program, 2015-2018 data from DEN, 2019

Combined totals for DEN's CIP costs from 2018-2038 are shown in **Table 10.18.** DEN's total CIP costs through the planning horizon of the 2020 CASP are estimated at over $7.4 billion. More than 40 percent of these costs are attributed to projects pertaining to DEN's Jeppesen Terminal/Great Hall.

Table 10.18. 2018-2038 DEN CIP Costs

Project Type	Cost	% of Total
Concourses A, B, C	$2,316,912,000	31%
Jeppesen Terminal/ "Great Hall"	$3,180,880,000	43%
Airside	$1,207,808,000	16%
Landside	$652,992,000	9%
2018-2038 DEN CIP Total Costs	**$7,358,592,000**	**100%**

Sources: Denver International Airport 2018-2022 Capital Program, 2015-2018 data from DEN, 2019

10.8. Total Project Costs

Table 10.19 shows the combined total project costs anticipated for the system through 2038. Overlapping costs are removed from PM, F&SOs, and future facility needs to avoid duplication. This is also true for projects identified by the 2020 CASP and covered under the existing CDOT CIP. These projects utilize estimates included in CDOT's CIP list (as opposed to those developed for the 2020

CASP). These projects are represented in the same 2020 CASP project category and were removed from other CDOT CIP costs. The remaining CDOT CIP project costs outside of the recommendations made in relation to the 2020 CASP include projects such as airfield signage, land acquisitions, runway relocations, etc. that are deemed important to the maintenance and development of the system. Total system project costs excluding DEN CIPs are estimated to be around $1.8 billion. Including DEN CIP costs, the total project costs for the system increases to $9.1 billion.

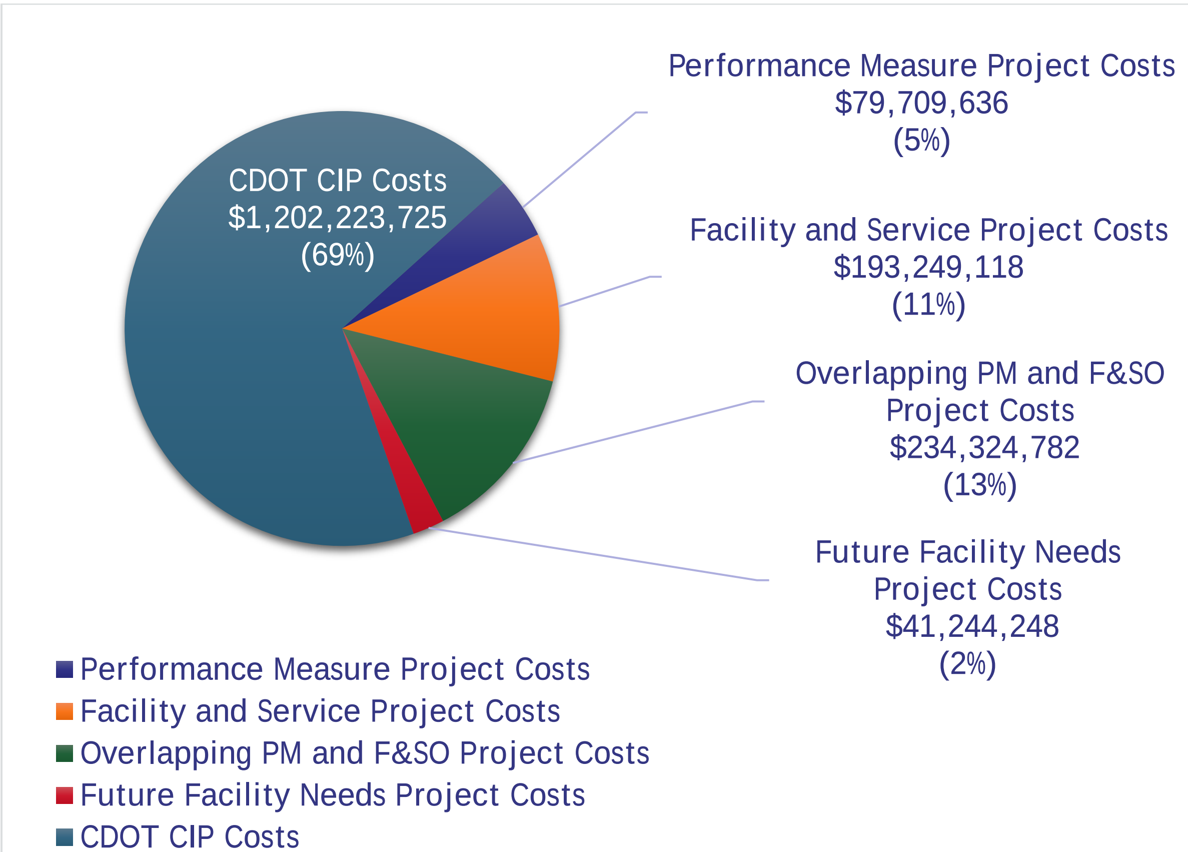
Table 10.19. Total System Projects Costs by Recommendation

Recommendation	Cost	% of Total (Excluding DEN CIP Costs)	% of Total (Including DEN CIP Costs)
Performance Measure Project Costs	$79,709,636	5%	1%
Facility and Service Objective Project Costs	$193,249,118	11%	2%
Future Facility Need Project Costs	$234,324,782	13%	3%
Overlapping PM and F&SO Costs	$41,244,248	2%	0%
CDOT CIP Costs	$1,202,223,725	69%	13%
Denver International (DEN) CIP Costs	$7,358,592,000		81%
Total Costs (Excluding DEN CIP Costs)	**$1,750,751,508**	**100%**	
Total Costs (Including DEN CIP Costs)	**$9,109,343,508**		**100%**

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Denver International Airport 2018-2022 Capital Program, 2019; Kimley-Horn, 2020

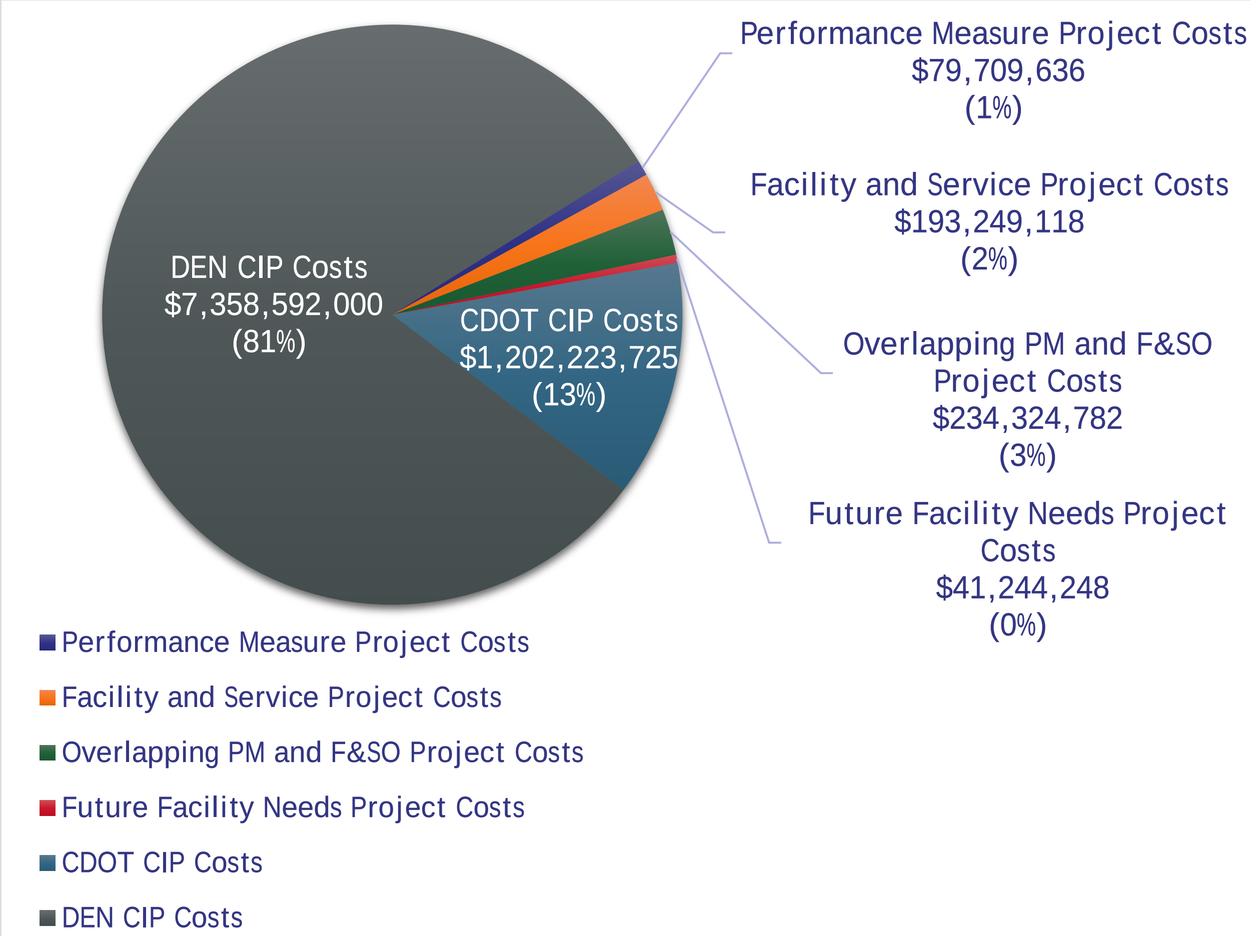
Figure 10.20 and **Figure 10.21** depict total system costs excluding and including DEN CIPs by recommendation type.

Figure 10.20. Total System Project Costs Excluding DEN CIP Costs by Recommendation ($1.7B)



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

Figure 10.21. Total System Costs Including DEN CIP Costs by Recommendation ($9.1B)



Note: Percentages are rounded to nearest whole number.

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Denver International Airport 2018-2022 Capital Program, 2019; Kimley-Horn, 2020

10.9. Total System Plan Cost Summary by Airport Classification

This section builds upon the total development costs for recommended projects in the previous section and re-categorizes those costs by airport classification. Doing so allows for a high-level view of the entire system and identification of airport classifications that may benefit from funding prioritization in the future. The total system project costs are categorized by airport classification in **Table 10.20.** Total system costs by airport classification, with and without DEN CIP costs, are shown in **Figure 10.22** and **Figure 10.23.**

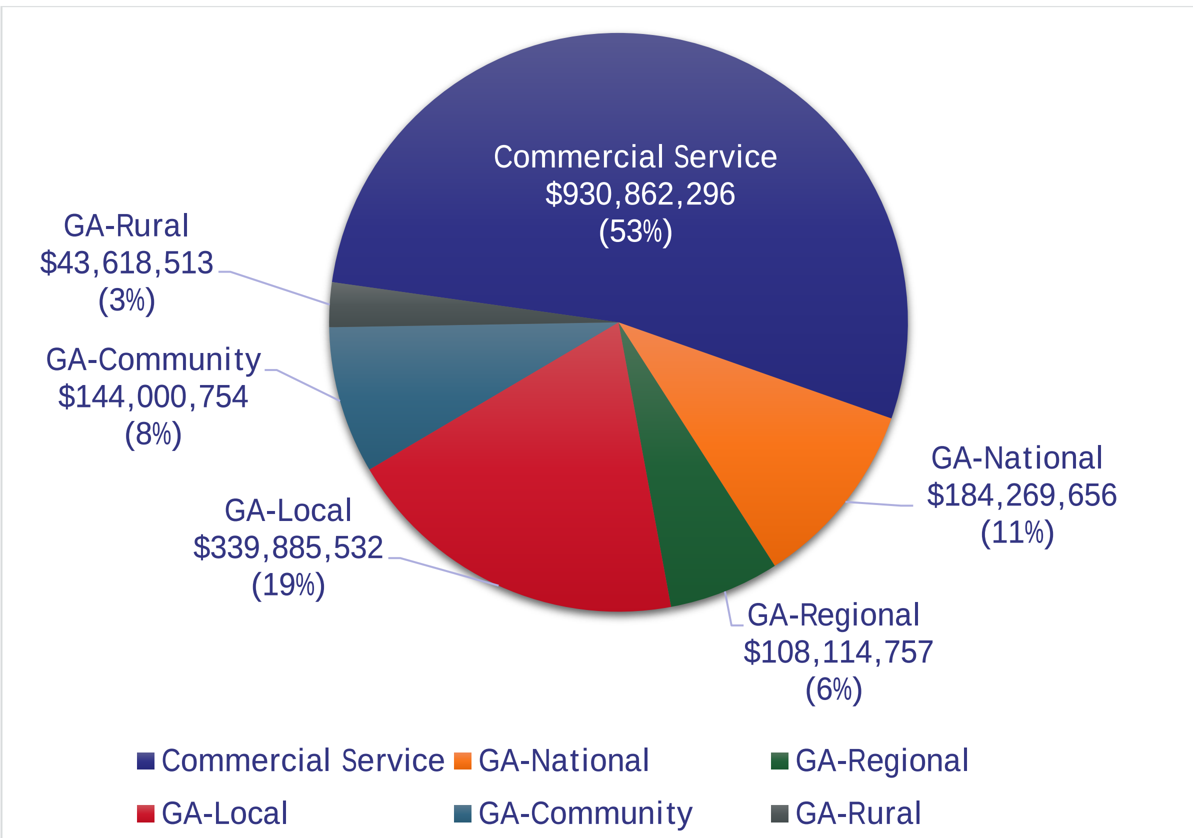
Table 10.20. Total System Project Costs by Airport Classification

2020 CASP Airport Classification	Costs Excluding DEN CIP	Costs Including DEN CIP	% of Total Excluding DEN CIP	% of Total Including DEN CIP
Commercial Service	$930,862,296	$8,289,454,296	53%	91%
GA-National	$184,269,656	$184,269,656	11%	2%
GA-Regional	$108,114,757	$108,114,757	6%	1%
GA-Local	$339,885,532	$339,885,532	19%	4%
GA-Community	$144,000,754	$144,000,754	8%	2%
GA-Rural	$43,618,513	$43,618,513	2%	0%*
Totals	**$1,750,751,508**	**$9,109,343,508**	**100%**	**100%**

**Note: Percentages are rounded to nearest whole number.*

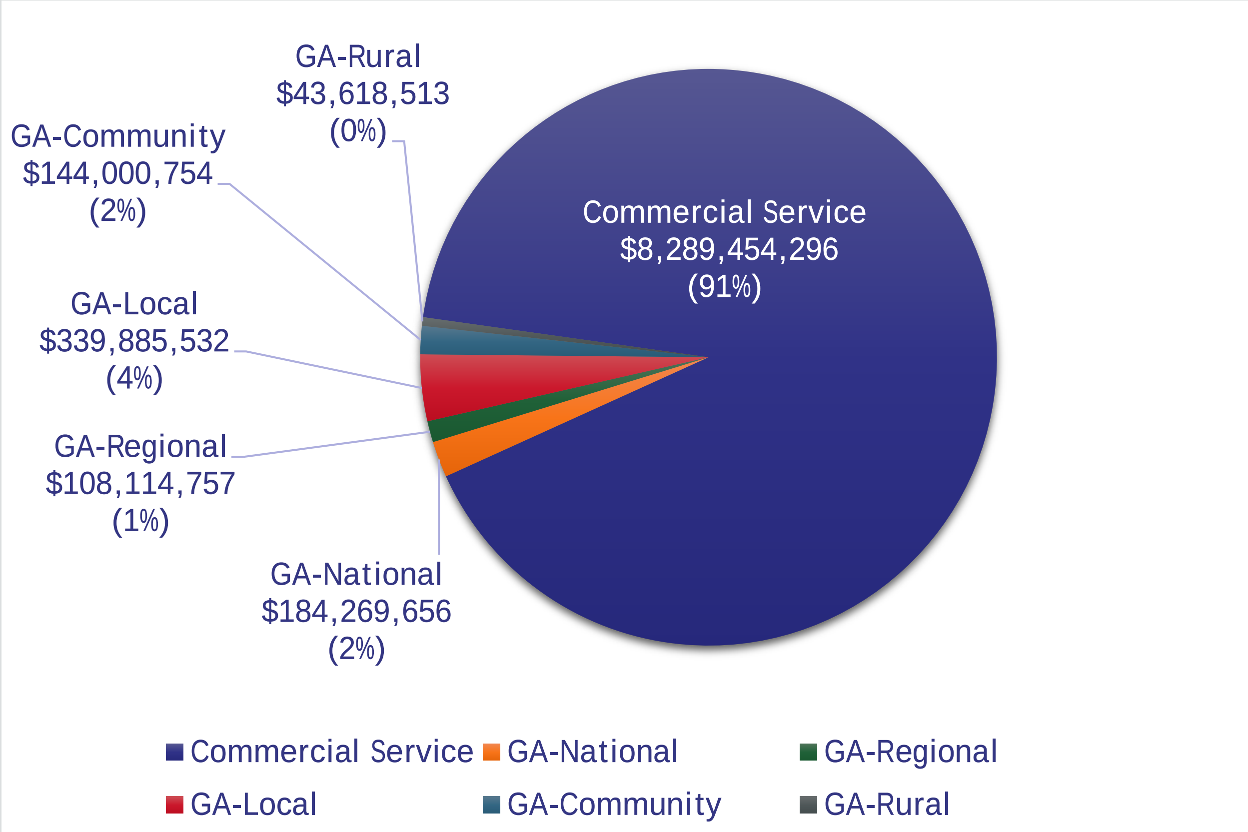
Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Denver International Airport 2018-2022 Capital Program, 2019; Kimley-Horn, 2020

Figure 10.22. Total System Costs by Airport Classification Excluding DEN CIP ($1.7B)



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

Figure 10.23. Total System Costs by Airport Classification Including DEN CIP Costs ($9.1B)

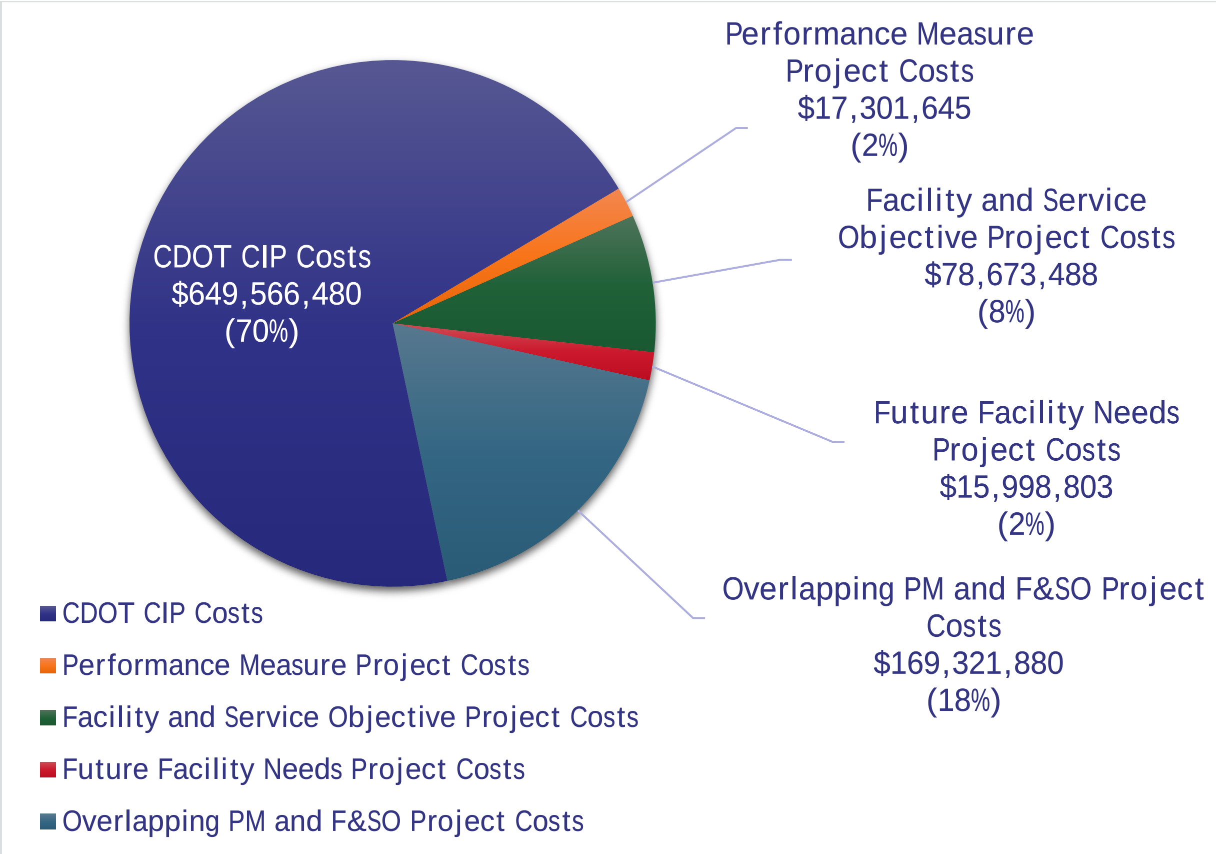


Note: Percentages are rounded to nearest whole number.

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Denver International Airport 2018-2022 Capital Program, 2019; Kimley-Horn, 2020

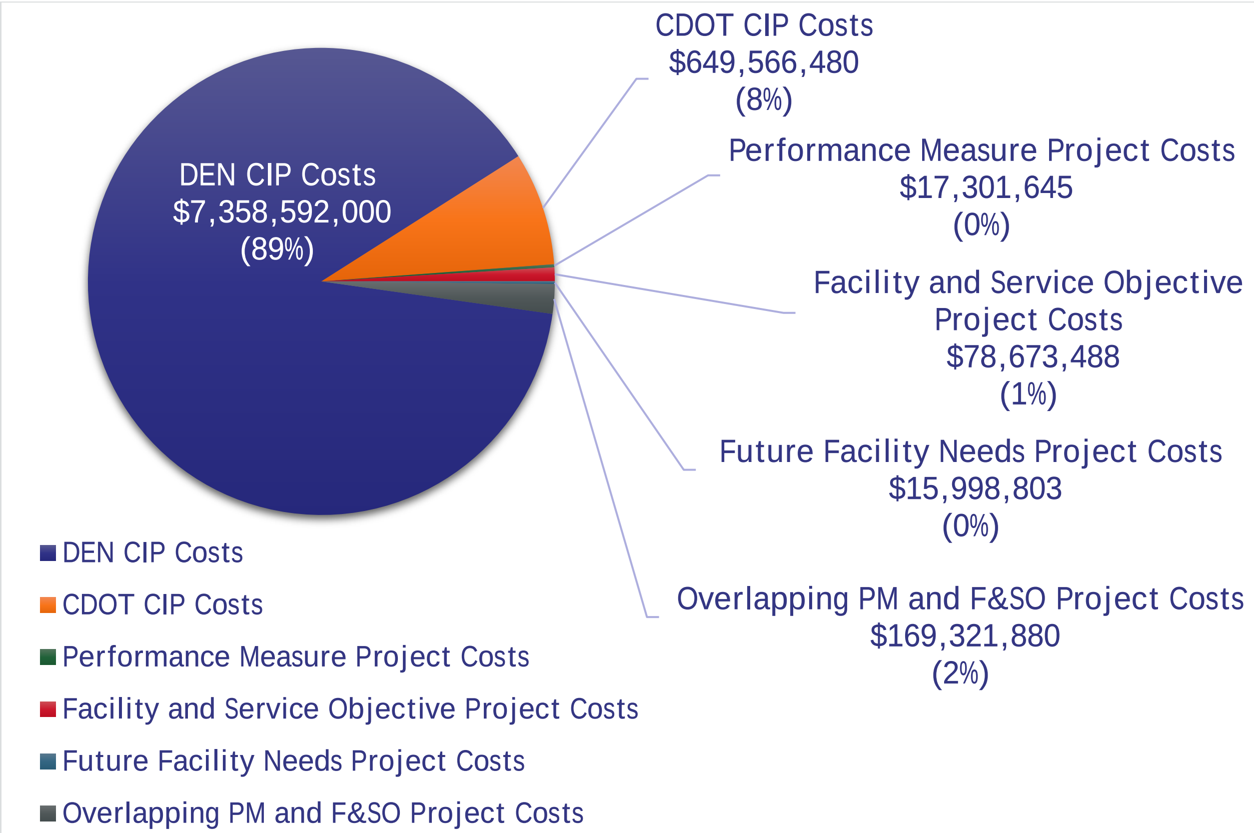
Figure 10.24 and **Figure 10.25** show Commercial Service airport classification costs with and without the inclusion of DEN CIPs. **Figure 10.26** through **Figure 10.30** summarize the total costs for each subsequent airport classifications by recommendation type.

Figure 10.24. Project Costs Summary: Commercial Service Excluding DEN CIP Costs ($930M)



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

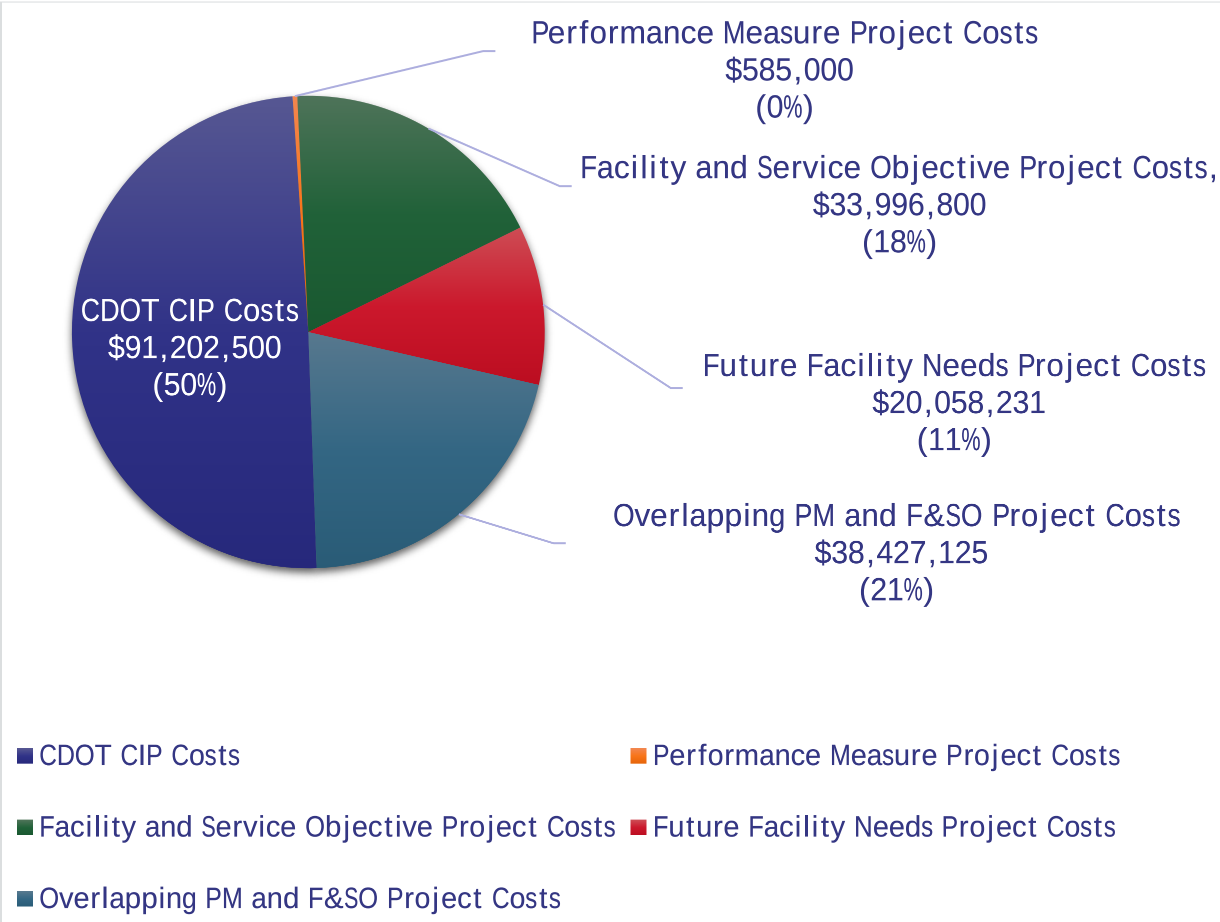
Figure 10.25. Project Costs Summary: Commercial Service, Including DEN CIPs ($8.3B)



**Note: Percentages are rounded to nearest whole number.*

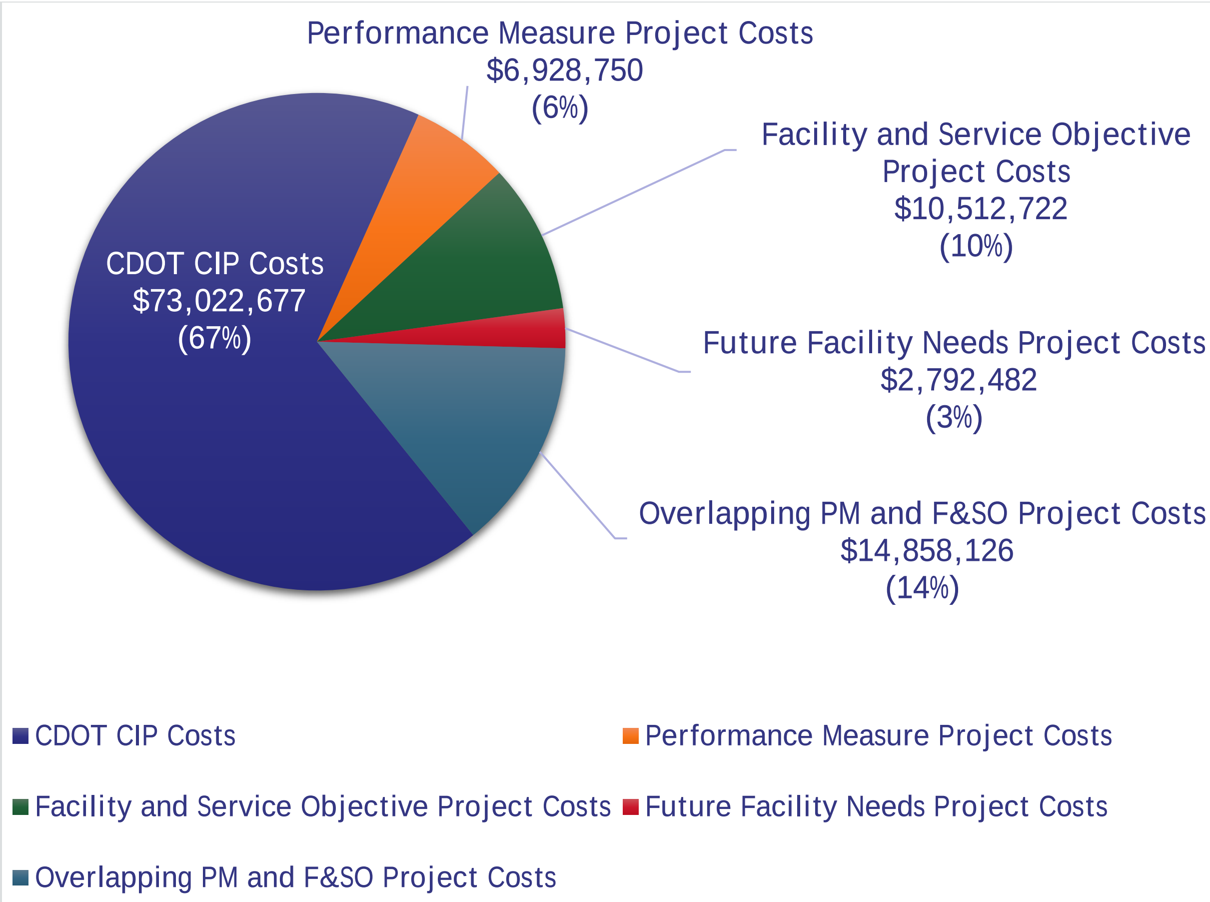
Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Denver International Airport 2018-2022 Capital Program; Kimley-Horn, 2020

Figure 10.26. Project Costs Summary: GA-National ($184M)



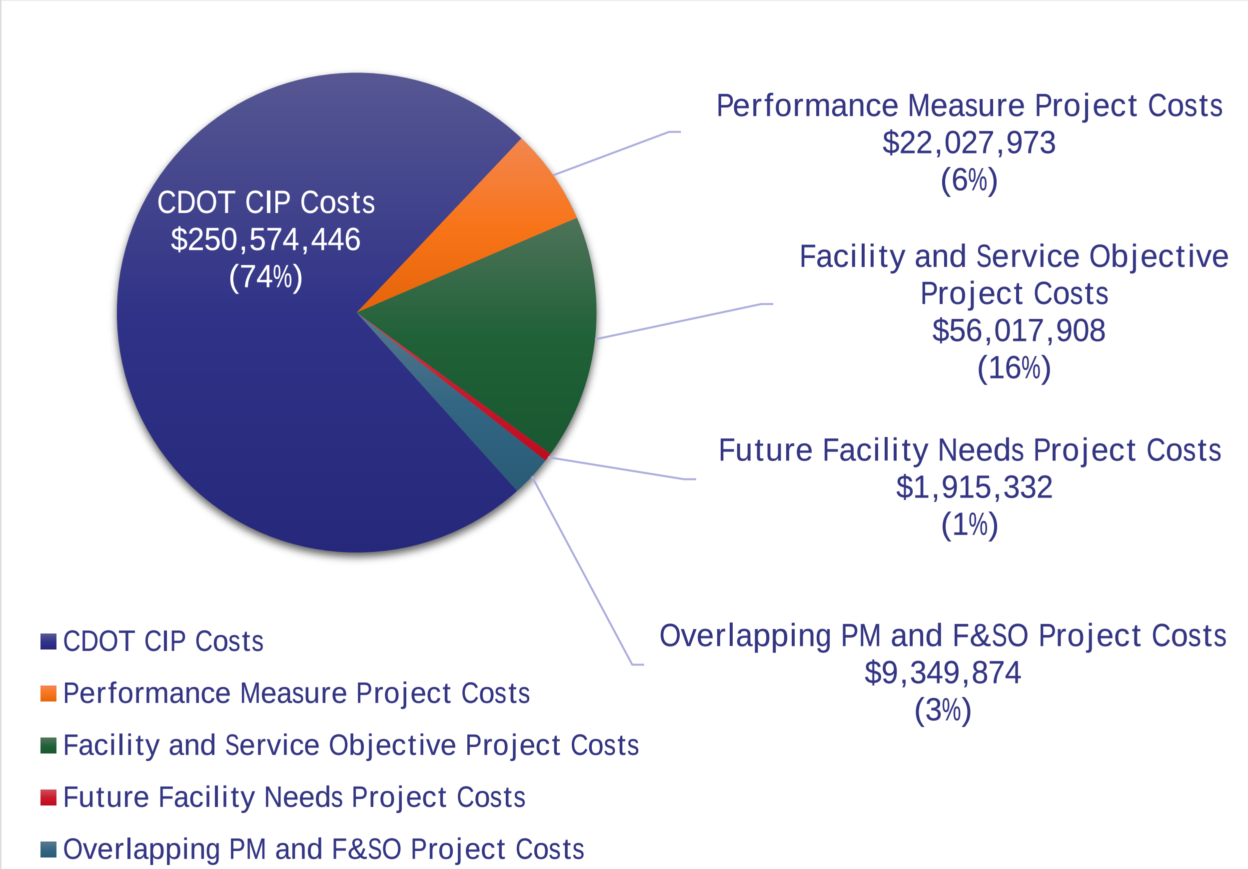
Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

Figure 10.27. Project Costs Summary: GA-Regional ($108M)



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

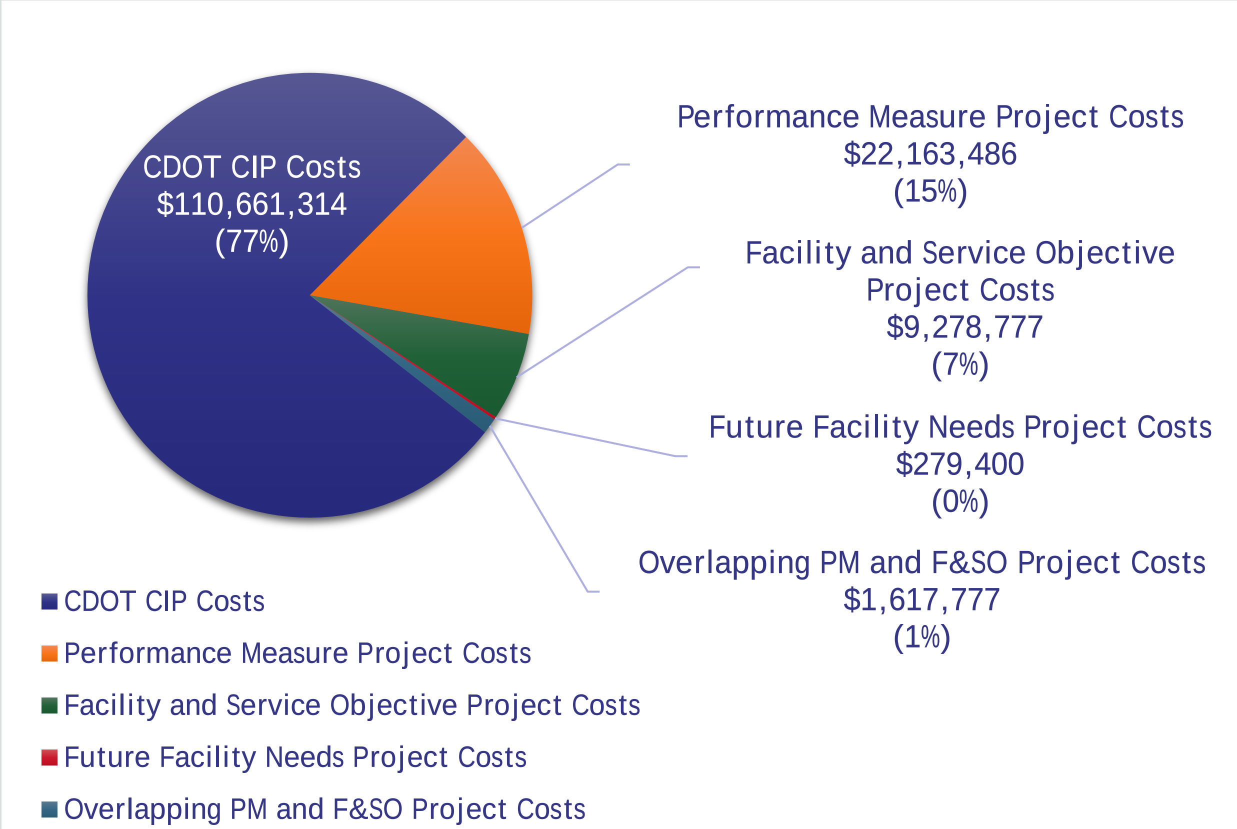
Figure 10.28. Project Costs Summary: GA-Local ($340M)



Note: Percentages are rounded to nearest whole number.

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

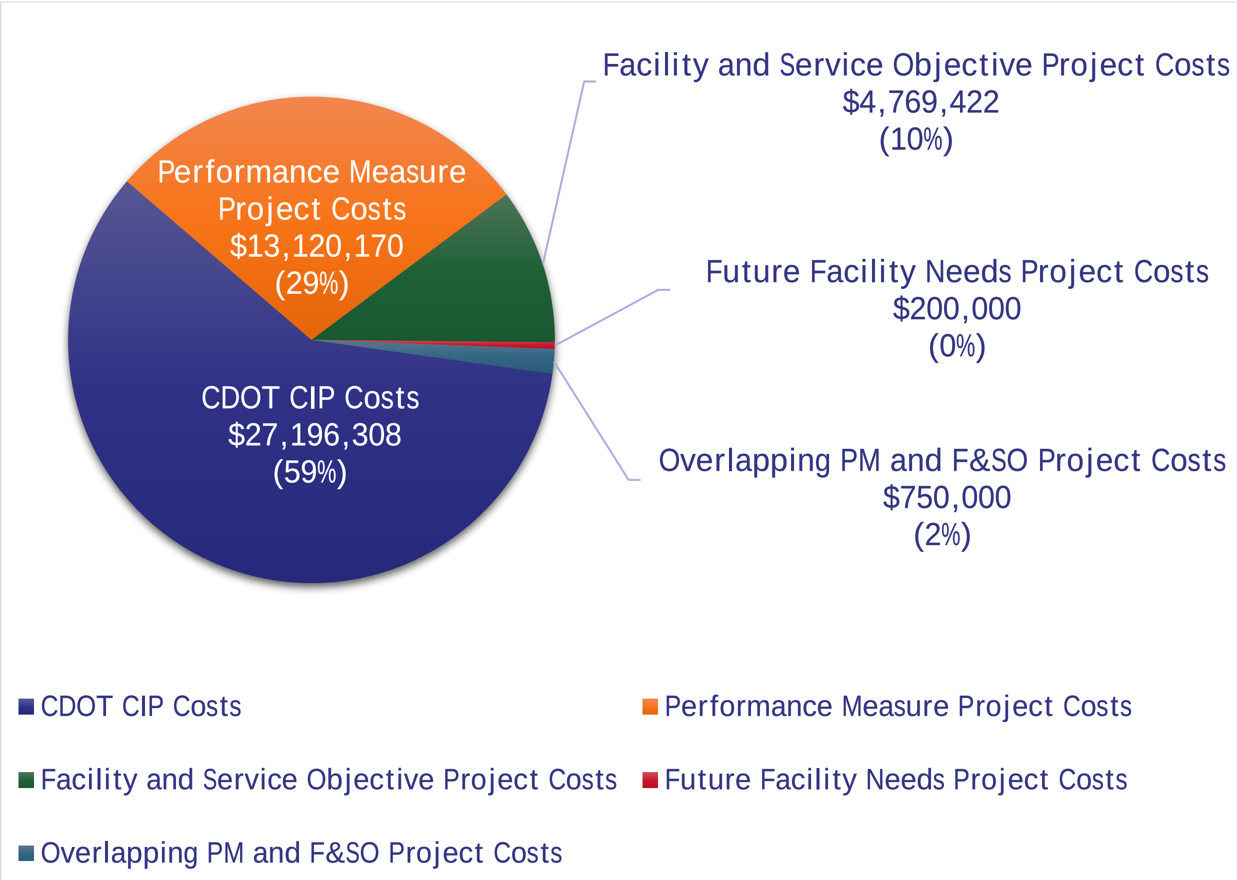
Figure 10.29. Project Costs Summary: GA-Community ($145M)



Note: Percentages are rounded to nearest whole number.

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

Figure 10.30. Project Costs Summary: GA-Rural ($44M)



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; Kimley-Horn, 2020

10.10. Funding Sources

To adequately plan for projects that accommodate anticipated future needs and improve the overall health of the system, it is important to secure appropriate funds. Improvement project costs often exceed an individual airport's revenue streams and will require funding from external sources. Airports many times utilize a combination of federal (as applicable), state, and local funds to implement projects. An airport sponsor's ability to identify and secure funding from different resources influences the likelihood of airport development. Usually, the majority of funding for airport projects at airports in the National Plan of Integrated Airport Systems (NPIAS), other than large commercial service airports such as DEN, come from the Federal Aviation Administration (FAA) which supplements state and local funding mechanisms. Colorado has been fortunate the past few years to contribute funding for many airport projects. The following sections detail funding sources for Colorado's system at the federal, state, and local levels.

10.10.1. Federal Funding

NPIAS airports are eligible to receive federal funding to cover a percentage of eligible costs for their projects through the Airport Improvement Program (AIP) under FAA Order 5100.338D, *Airport Improvement Program Handbook*. The AIP is funded entirely by the Airport and Airway Trust Fund through aviation fees and taxes (i.e. airline ticket taxes, cargo fees, aircraft fuel taxes, etc.). Projects eligible for funding under the AIP fall broadly under planning, development, and noise compatibility. Projects may include (pending justification and other criteria) primary runway extensions, airfield lighting/signage, acquisition of SRE, and installation of perimeter fencing amongst a comprehensive list of other projects designated to strengthen the nation's aviation infrastructure.

Due to the costs of projects exceeding the amount of available AIP funds, the FAA distributes AIP funds according to national priorities and objectives. The FAA utilizes a formulaic process to determine AIP fund apportionments for major entitlement categories. The remaining funds from this process are then distributed into a discretionary fund which is used to support airport noise projects, the Military Airport Program, and outstanding projects based on a national prioritization formula. According to the FAA, Colorado received nearly $61.5 million in AIP funds for FY 2019.[1]

In February 2019, Public Law 116-6 "Consolidated Appropriations Act, 2019" was signed into effect and resulted in the addition of $500 million of discretionary grants under the AIP as "Supplemental Appropriations". Supplemental funds were not subject to the same prioritization model as traditional AIP funds. Instead, these funds followed the guidance of the FAA Reauthorization Act 2018, which prioritized small airports and expanded eligibility requirements for terminal-related projects. During federal FY 2019, Colorado received an intent to award from the FAA of $4 million in supplemental funds to support land acquisition and terminal building expansion projects.[2]

10.10.2. State Funding

While federal funding is available to NPIAS airports, Colorado's aviation system is also fortunate to be supported through state funds. The state does not appropriate general funds for aviation which is supported solely through state aviation fuel taxes and the State Infrastructure Bank (SIB) program.

10.10.2.1. Colorado's Aviation Tax Fuel Disbursements

Under Colorado's aviation tax fuel disbursements, the majority of sales and excise taxes generated by fuel sales in Colorado are returned to the airports for aviation purposes. The amount of tax disbursements eligible airports can receive are proportional to the amount of fuel sales tax they generate equating to four cents per gallon of the excise tax on AvGas and Non-Commercial Jet A fuel and 2.9 percent of sales tax collected from Jet A fuel.[3] **Figure 10.31** shows the fuel tax disbursements for FY 2019. For fiscal year 2019, Colorado generated almost $33 million in fuel excise and sales taxes of which 65 percent was distributed back to eligible airports in the form of state tax fuel disbursements.

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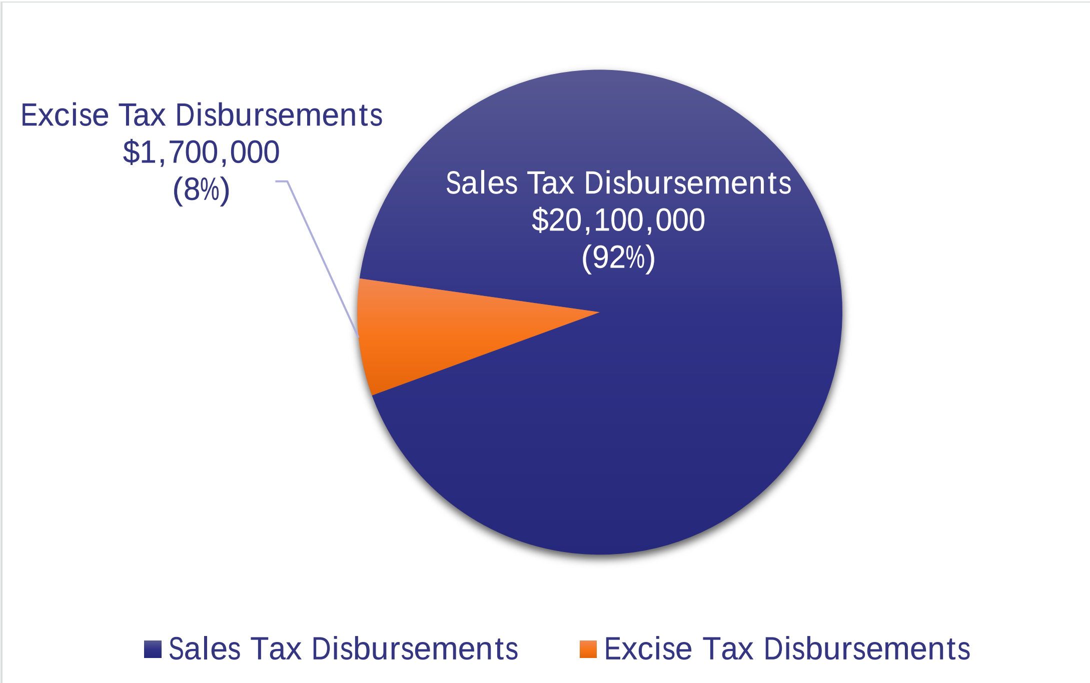
[1] FAA - "AIP Grants Awarded by State FY 2019": https://www.faa.gov/airports/aip/grant_histories/annual_reports/media/aip-grants-awarded-by-state-fy-2019.pdf
[2] FAA – "FY 2019 Supplemental Appropriation, Airport Improvement Program Anticipated Grants": https://www.faa.gov/airports/aip/aip_supplemental_appropriation_2019/media/AIP-Supplemental-Projects-Intent-Award-2019-11-22.pdf
[3] CDOT Division of Aeronautics – *2019 Division of Aeronautics Annual Report":* https://www.codot.gov/programs/aeronautics/PDF_Files/AnnualReports/2019AeroAnnRep

Figure 10.31. FY 2019 State Tax Fuel Disbursements



Source: CDOT Division of Aeronautics, 2019

10.10.2.2. Colorado Discretionary Aviation Grant (CDAG) Program

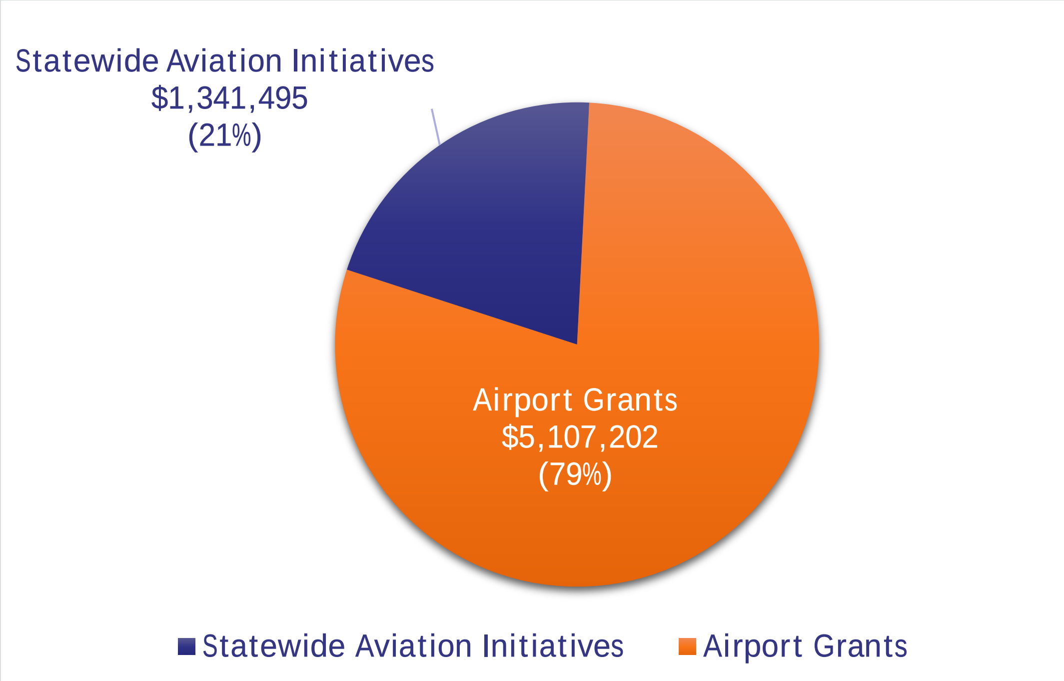
The CDAG Program is funded from the remaining 35 percent of monies generated from aviation fuel taxes less the Division of Aeronautics' administrative costs. CDAG funds are used to award individual airport grants back to the airports for various improvement projects and to support statewide aviation initiatives under the discretion of the Colorado Aeronautical Board (CAB).[4] The Division of Aeronautics administers statewide aviation initiatives to fund the improvement of several key aspects of on-airport infrastructure and airport operations. For FY 2019, nine statewide aviation initiatives obtained CDAG funding:

- Airfield Maintenance – Crack Sealant Program
- Airport Inspections (PCI & 5010)
- Automated Weather Observing System Development and Maintenance
- Aviation System Plan & Economic Impact Study
- Communications/Outreach/Safety
- Internship Program
- Remote Tower Project
- Surplus Airport Equipment Program
- USDA – Wildlife Hazard Mitigation

More information on CDOT's programs and initiatives can be found in **Section 10.13 Development Priorities and Justification.** The makeup of how CDAG funding was distributed in FY 2019 is shown in **Figure 10.32.** Almost 80 percent of CDAG funding was allocated in individual airport grants in FY 2019.

[4] Ibid

Figure 10.32. FY 2019 CDAG Funding



Source: CDOT Division of Aeronautics 2019 Division of Aeronautics Annual Report, 2019

10.10.2.3. State Infrastructure Bank (SIB)

In 1999, CDOT adopted the SIB Loan Program which provides low-interest revolving loans to fund needed transportation facilities. A number of system airports have used SIB loans to implement air traffic control towers, improve pavement conditions, obtain snow removal equipment, and fund land acquisitions. As of June 2019, the SIB program currently administers loans to four system airports totaling $13.5 million for aviation purposes to the benefit of six different communities in the state.[5] Many more airports have utilized the SIB loan program in the past.

10.10.3. Local Funding

Local communities, counties, and individual airport revenues are used to fund the remaining project costs leftover after applicable state and federal funding is applied. Local funds are also needed to fund airport operations and general maintenance of the facilities. Local funding may be derived from a combination of sources such as private funds, airport revenues, bond funds, and general fund revenues from local governments. Typically, state-funded airport project costs are split between 90 percent state and 10 percent local funds. Currently, there are no state statutes mandating local funds to match 10 percent of project costs. However, airports requesting grants from CDAG are subject to CAB approval which has the discretion to approve grants with a local contribution of less than 10 percent.[6]

[5] CDOT Division of Aeronautics – "2019 Annual Report": https://www.codot.gov/programs/aeronautics/PDF_Files/AnnualReports/2019AeroAnnRep

[6] CDOT Division of Aeronautics - "Programs & Procedures Manual 2019": https://www.codot.gov/programs/aeronautics/programs/ProgramProcManual/view

10.10.4. Historical Funding

For FY 19 alone, Colorado obtained a combined $83.3 million in AIP funds and aviation fuel taxes. Sixty-five percent, or roughly $21.8 million, of aviation fuel tax revenues were disbursed back to the airports for their own aviation purposes. Additionally, 2019 expenditures included CDOT Division of Aeronautics' administrative costs, $5.1 million in individual airport grants, and $1.3 million to fund statewide initiatives.[7] CDOT Division of Aeronautics maintains a list of CIPs for 65 public-use airports in the state. The current CDOT CIP (2020-2029) has defined $695 million in project needs to improve system conditions by increasing safety, efficiency, and capacity. According to CDOT's most recent annual report for FY 2019, $65.9 million of combined federal, state, and local funds were leveraged to support CIP projects.[8]

Table 10.21 shows Colorado's investments for the past five fiscal years by funding source – FAA, CDAG, and local. The FAA data was obtained from online AIP grant histories. On average, Colorado's system is awarded $50 million in AIP funds excluding AIP monies awarded to DEN. CDAG has contributed an average of $4.3 million annually for the past five years to fund airport projects. Assumptions were made to determine local contributions such as a five percent local match for AIP funds and a 10 percent match for CDAG funds. Local contributions were not calculated for system investment at DEN as it's recognized DEN utilizes many different resources to fund maintenance and development beyond FAA AIP. While some local contribution is required from all airports, including DEN, DEN's funding for projects is significantly different and no assumption was made in this section regarding their local contribution. Based on these assumptions, local contributions were noted to average $3 million per year. In addition to FAA AIP funds, Colorado was awarded an average of $16 million in FAA supplemental appropriations in 2018 and in 2019, however, averages to over $6 million when the prior three years are considered. Although FAA AIP supplemental funding is identified to potentially continue through the life of the latest FAA bill, the program is administered on a yearly basis and continuation of funding is largely unknown. Due to this reason and to make conservative assumptions of likely available investment in the future, supplemental funds are not included in the totals for average annual investments. Average annual investments into the system excluding DEN AIP awards amount to $57 million. Including DEN AIP monies, average annual system investments rise to $76 million.

[7] CDOT Division of Aeronautics
[8] Ibid

Table 10.21. Colorado System Investments by Source (FY 2015-2019)

Source	2015	2016	2017	2018	2019	2015-2019 Average
FAA AIP (Excluding DEN)	$51,033,559	$70,952,920	$36,529,085	$51,025,750	$41,275,135	$50,163,290
FAA AIP Supplementary	$0	$0	$0	$27,550,000	$4,000,000	$6,310,000
CDOT CDAG	$4,743,649	$2,575,667	$2,485,745	$5,162,419	$6,448,697	$4,283,235
Local Contributions	$3,026,043	$3,805,213	$2,075,029	$3,067,529	$2,708,626	$2,936,488
Total Available Investments (Excluding DEN)	**$58,803,251**	**$77,333,800**	**$41,089,859**	**$86,805,698**	**$54,432,458**	**$63,693,013**
DEN FAA AIP	*$20,029,724*	*$8,642,131*	*$14,570,000*	*$29,793,633*	*$20,219,342*	*$18,650,966*
Total Available Investments (Including DEN Minus AIP Supplementary)	**$78,832,975**	**$85,975,931**	**$55,659,859**	**$89,049,331**	**$70,651,800**	**$76,033,979**

Note: Federal fiscal years run from October 1 to September 30, while state fiscal years run from July 1 to June 30. There may be discrepancies in reporting due to these different timeframes. Additionally, due to the nature of the FAA AIP Supplementary program, these funds are not included in total future available investments as the continuation of the program in the future is largely unknown.

Sources: CDOT Division of Aeronautics 2015-2019 Division of Aeronautics Annual Report; Denver International Airport 2018-2022 Capital Program, 2019; FAA AIP Grant Histories Data, 2015-2019; Kimley-Horn, 2020

10.10.5. Funding Gap

The prior section determined the average available funding for Colorado's system within the past five fiscal years. This information is used to determine the amount of funding that may be available to fund the financial needs identified in the 2020 CASP. This financial need represented projects necessary to maintain and optimize the system to meet the desired goals of the 2020 CASP. System needs often exceed the available funding for investment and it is important to examine this potential gap. The following section compares annual system needs to average annual investment in two ways, both with and without DEN's financial needs.

10.10.5.1. Funding Gap Excluding DEN Needs

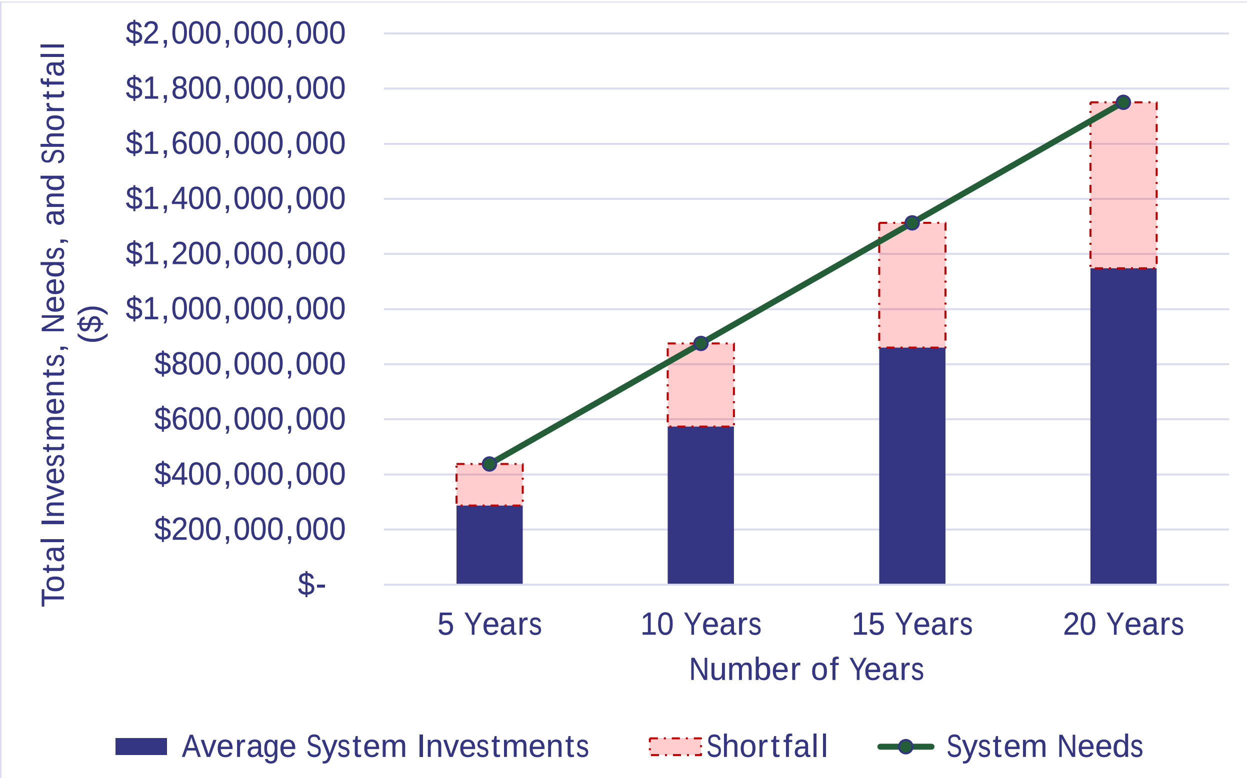
Table 10.22 compares Colorado's annualized system needs to the average annual investment defined in previous sections. Total system projects were anticipated to approach $1.8 billion over the next 20 years. The annualized system needs are estimated to average approximately $88 million per year. Average yearly investment of federal, state, and local funds into Colorado's system is approximately $57 million based on historical trends. The shortfall between annualized system needs and Colorado's historical funding is approximately $30 million per year. As demonstrated in **Table 10.22**, this average gap increases each year that funding is not available and expected to reach $603 million over the 20-year period. **Figure 10.33** shows the difference between average annual investment and the financial needs of the system over the next 20 years.

Table 10.22. Annualized System Needs vs. System Investment Over Time (Excluding DEN)

Time Period	System Needs	System Investment	Shortfall
1 Year	$87,537,575	$57,383,013	$30,154,562
5 Years	$437,687,877	$286,915,066	$150,772,811
10 Years	$875,375,754	$573,830,132	$301,545,622
15 Years	$1,313,063,631	$860,745,198	$452,318,433
20 Years	$1,750,751,508	$1,147,660,265	$603,091,244

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; CDOT Division of Aeronautics 2015-2019 Division of Aeronautics Annual Report; Denver International Airport 2018-2022 Capital Program, 2019; FAA AIP Grant Histories Data, 2015-2019; Kimley-Horn, 2020

Figure 10.33. Annualized System Needs vs. System Investment Over Time (Excluding DEN)



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; CDOT Division of Aeronautics 2015-2019 Division of Aeronautics Annual Report; Denver International Airport 2018-2022 Capital Program, 2019; FAA AIP Grant Histories Data, 2015-2019; Kimley-Horn, 2020

10.10.5.2. Funding GAP Including DEN Needs

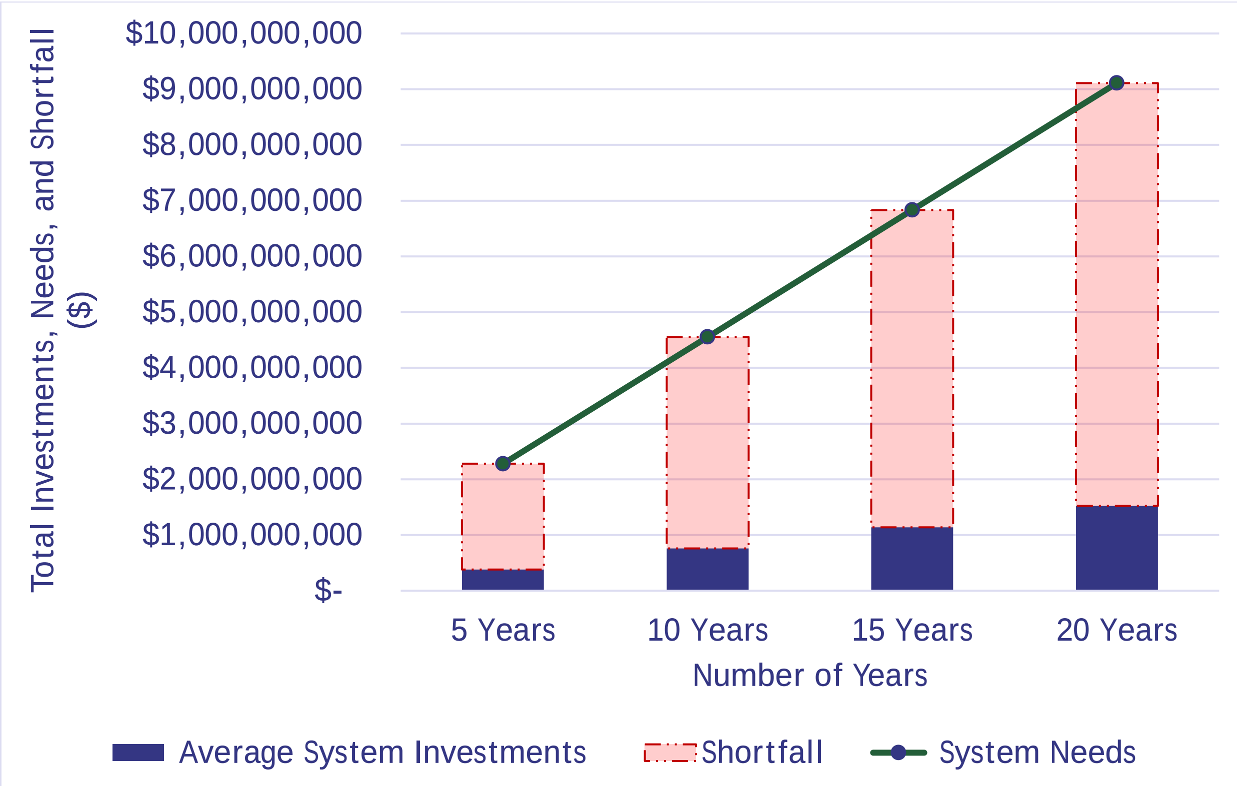
Table 10.23 and **Figure 10.34** compare average system investments, including DEN, against system needs per year. The annualized system needs exponentially rise to $455 million. The average annual investment including federal funding for DEN is estimated at $76 million a year including average of DEN AIP funding. The shortfall between investment and need becomes is anticipated to amount to $7.6 billion over 20 years.

Table 10.23. Annualized System Needs vs. System Investment Over Time (Including DEN)

Time Period	System Needs	System Investment	Shortfall
1 Year	$455,467,175	$76,033,979	$379,433,196
5 Years	$2,277,335,877	$380,169,896	$1,897,165,981
10 Years	$4,554,671,754	$760,339,792	$3,794,331,962
15 Years	$6,832,007,631	$1,140,509,688	$5,691,497,943
20 Years	$9,109,343,508	$1,520,679,585	$7,588,663,924

Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; CDOT Division of Aeronautics 2015-2019 Division of Aeronautics Annual Report; Denver International Airport 2018-2022 Capital Program, 2019; FAA AIP Grant Histories Data, 2015-2019; Kimley-Horn, 2020

Figure 10.34. Annualized System Needs vs. System Investment Overtime (Including DEN)



Sources: CDOT Division of Aeronautics CIP 2020-2024; CDOT Division of Aeronautics CIP 2025-2040; CDOT Division of Aeronautics 2015-2019 Division of Aeronautics Annual Report; Denver International Airport 2018-2022 Capital Program, 2019; FAA AIP Grant Histories Data, 2015-2019; Kimley-Horn, 2020

10.11. Summary of 2020 CASP Recommendations and Implementation

The prior sections have summarized the financial aspects of the CASP recommendations and findings. In addition to financial needs, there are other recommendations that will assist airports and CDOT Division of Aeronautics with enhancing the system's performance and achieving the goals established for the CASP. The following summarizes the non-financial recommendations for each PM, by goal category. These recommendations are focused on other steps or action items airports and CDOT Division of Aeronautics can take that do not require financial commitments.

10.11.1. Safety and Efficiency

The safety and efficiency goal was established to advance Colorado's airport system by promoting and preserving ***safe and efficient*** facilities, on and off airports. Providing safe facilities and operating environments for the users of Colorado's aviation system helps preserve their continuous operation and enhances community relations. **Table 10.24** summarizes 2018 performance, future performance targets, and recommendations related to safety and efficiency.

Table 10.24. Safety and Efficiency Recommendations

<table>
<tr><th colspan="2">Performance Measure</th><th>2018 Performance</th><th>Performance Target</th><th>Recommendation</th></tr>
<tr><td colspan="2">Percent of airports with approaches negatively impacted by obstructions</td><td>35%</td><td>0%</td><td>Airports should work with local municipalities and other stakeholders to mitigate obstructions within the approach surface to reduce the risk of aircraft accidents.</td></tr>
<tr><td colspan="2">Percent of airports that have full perimeter wildlife fencing</td><td>49%</td><td>85%</td><td>Airports should coordinate with the FAA or CDOT Division of Aeronautics to perform a more detailed analysis to discern individual airport fencing needs. Airports with partial perimeter wildlife fencing should coordinate with the FAA, CDOT Division of Aeronautics, and their consultants to determine the feasibility and associated costs of installing appropriate wildlife fencing around the remaining facility.</td></tr>
<tr><td rowspan="2">Percent of airports that have adopted land use and height controls</td><td>Land Use Controls</td><td>62%</td><td>100%</td><td rowspan="2">Airports who have not adopted land use and/or height controls should initiate conversations with their local zoning authority(ies). In addition, CDOT Division of Aeronautics should consider developing additional guidance for airports and communities to promote and improve land use compatibility around airports.</td></tr>
<tr><td>Height Controls</td><td>58%</td><td>100%</td></tr>
</table>

Performance Measure		2018 Performance	Performance Target	Recommendation
Percent of NPIAS airports that meet current FAA design standards under AC 150/5300-13A	*Taxiway Geometry Standards*	10%	100%	Airports should address taxiway geometry issues as part of other projects unless an individual airport is identified by the FAA as having Runway Incursion Mitigation (RIM) needs. Airports should also promote focused RSA compliance in local comprehensive planning processes to identify and mitigate/correct existing and/or future deficiencies.
	RSA Standards	78%	100%	

Source: Kimley-Horn, 2020

10.11.2. Access and Mobility

The Access and Mobility goal was established to provide Colorado's airports with infrastructure and sufficient capacity, providing the public adequate ***access and mobility*** in utilizing the aviation system. Providing reasonable access to facilities and services that can accommodate demand helps promote air mobility across the state and beyond. **Table 10.25** summarizes 2018 performance, future performance targets, and recommendations related to access and mobility.

Table 10.25. Access and Mobility Recommendations

<table>
<tr><th colspan="2">Performance Measure</th><th>2018 Performance</th><th>Performance Target</th><th>Recommendation</th></tr>
<tr><td colspan="2">Percent of airports with a dedicated SRE building</td><td>44%</td><td>61%</td><td>CDOT Division of Aeronautics could consider a program to allocate state aviation funds to prioritize the construction of dedicated SRE buildings at airports with SRE needs.</td></tr>
<tr><td colspan="2">Percent of population within a 30-minute drive time of an all-weather runway</td><td>83%</td><td>85%</td><td>CDOT Division of Aeronautics could consider assisting with instrument approach procedure development through discussions with FAA, as well as supporting weather reporting infrastructure to increase accessibility to the system. Additionally, CDOT Division of Aeronautics should continue to monitor population growth and trends statewide to determine potential impacts to airport needs to support the growing population.</td></tr>
<tr><td rowspan="2">Percent of airports with adequate terminal capacity</td><td>Commercial Service</td><td>29%</td><td>100%</td><td rowspan="3">CDOT Division of Aeronautics should coordinate with airports related to their terminal and hangar needs as well as monitor aviation demand that could affect those needs.</td></tr>
<tr><td>General Aviation</td><td>58%</td><td>100%</td></tr>
<tr><td colspan="2">Percent of airports with adequate transient hangar spaces</td><td>44%</td><td>61%</td></tr>
</table>

Source: Kimley-Horn, 2020

10.11.3. Economic Sustainability

The Economic Sustainability goal was established to support ***sustainable economic*** growth and development and continue Colorado's existing status as a leader in technology, testing, and the aerospace industry. Equipping airports with the facilities and services to support business use of Colorado's aviation system will help expand the economic impact of Colorado's airports. **Table 10.26** summarizes 2018 performance, future performance targets, and recommendations related to economic sustainability.

Table 10.26. Economic Sustainability Recommendations

Performance Measure	2018 Performance	Performance Target	Recommendation
Percent of airports with necessary fuel type, available 24/7	94%	85%	Airports should continue to work with CDOT Division of Aeronautics to review potential funding sources to install new fueling facilities that are available to pilots 24/7.
Percent of airports that support the aerospace manufacturing, technology, and/or testing industry	36%	No Target Established	CDOT Division of Aeronautics should continue to promote the aerospace manufacturing, technology, and/or testing industry at CASP airports.
Percent of airports with adequate utilities	53%	85%	CDOT Division of Aeronautics should continue to work with airports to identify funding mechanisms for utility infrastructure as demand is realized.

Source: Kimley-Horn, 2020

10.11.4. System Viability

The System Viability goal was established to preserve airport system assets to ***promote fiscal responsibility and sustainable, cost-effective investments*** to ensure the system's long-term viability. Supporting projects that preserve infrastructure and further environmental and operational viability will help save limited resources. **Table 10.27** summarizes 2018 performance, future performance targets, and recommendations related to system viability.

Table 10.27. System Viability Recommendations

Performance Measure	2018 Performance	Performance Target	Recommendation
Percent of airports with certified on-site weather reporting (AWOS or ASOS)	77%	85%	CDOT Division of Aeronautics could continue to provide financial assistance to airports to obtain certified weather equipment.
Percent of airports with a pavement maintenance plan	64%	95%	CDOT Division of Aeronautics should continue to fund and prioritize primary runway and taxiway pavement maintenance and rehabilitation projects to extend the useful life of the pavements as well as to continue to promote safe facilities.
Percent of airports with an average runway and taxiway PCI of 70 or greater	47%	95%	

Source: Kimley-Horn, 2020

10.12. Development Priorities and Justification

CDOT Division of Aeronautics is committed to the success of not only its airports, but the entire multi-modal transportation system. This is proven by the $3.2 million invested in the following statewide aviation initiatives in FY 2019, as reported in CDOT Division of Aeronautics' *2019 Annual Report*.

- **2020 Colorado Aviation System Plan (CASP)**. Developed as a fresh, "from scratch" evaluation of Colorado's airport system that aligns with the strategic plan, Colorado's Long-Range Transportation Plan, with clear goals and objectives.
- **2020 Colorado Aviation Economic Impact Study (CEIS)**. Developed to quantify the total economic impact of the Colorado aviation system as well as on an individual airport basis. The study also quantified the construction, tax impacts, visitor spending, air cargo, and agricultural impacts.
- **Automated Weather Observing System Development and Maintenance**. Program funded to maintain and repair Colorado's network of 13 mountain top automated weather observing systems (AWOS) to increase safety for pilots flying over the Rocky Mountains. Airports who own and operate their AWOS are eligible to receive up to 90 percent of eligible costs for maintenance expenses.
- **Airport Sustainability Program**. Program that provides guidance, resources, and tools to 2020 CASP airports to assist in the self-preparation of customized airport sustainability plan. It should be noted that no monies were spent on this program in FY 2019.
- **Surplus Airport Equipment Program**. Developed to partner with DEN and other airports to coordinate and administer an annual sale of used airport service vehicles (varying percentages of costs funded by CDOT Division of Aeronautics dependent upon buying quantities) to GA and smaller commercial service airports who typically would be unable to afford the equipment new.
- **5010 Airport Inspections**. Funding allocated to conduct regular safety inspections at system airports.
- **USDA Wildlife Hazard Mitigation Program**. Funding allocated to assist system airports with approved wildlife programs.
- **Airport Internship Program**. Partnership with participating airports to partially fund an hourly wage for an intern.

- **Remote Air Traffic Control Program**. Initiative at Northern Colorado Regional Airport (FNL), in partnership with the FAA and Searidge Technologies to integrate ground-based video and aircraft track-based/radar components to provide air traffic data to air traffic controllers working in a remote facility.
- **Airfield Maintenance & Crack Sealant Program**. Funding allocated for a crack sealant rebate program for preventative maintenance of 2020 CASP airfield pavements. CDOT also offers airports up to 100 percent purchase reimbursements for crack fill machines intended to be used by a group of small airports in a region. Under the program, eligible airports may receive 100 percent reimbursements to purchase replacement parts as part of crack fill machine maintenance and upkeep.
- **Web-based Information Management (WIMS) System**. Management system that allows airport sponsors to apply for, track, and manage their grants from a central portal.
- **Communications, Pilot Outreach & Safety**. Funds the production of the Colorado Airport Directory and Colorado Aeronautical Chart to give pilots up-to-date airport and airway information.

These priorities are likely to continue to be critical to the overall success of Colorado's airport system. CDOT Division of Aeronautics should continue to evaluate the efficacy of the programs listed above, as well as consider including regular updates of the Airport Pavement Management System (APMS), the CASP, and the Colorado Aviation Economic Impact Study (CEIS). It is important that monitoring of the system's performance continue, as recommended by the FAA through its continuous planning process. The following are some continuous studies that should be part of CDOT's continuous system planning process.

Aviation education is no longer limited to collegiate activities in Colorado, as Colorado SKIES Academy (CSA) opened in 2019 as the first aerospace-focused primary education program in the state. CSA is a Cherry Creek School District charter middle school and is located on the grounds of Wings Over the Rockies - Exploration of Flight at Centennial (APA). CSA uses a project-based learning curriculum and gives students the opportunity to explore the aerospace industry through a variety of activities at airports and aerospace facilities. CSA also participates in outreach programs to attract and empower students to pursue advanced careers in aerospace and aviation.

10.12.1. Airport Pavement Management System (Continuous) Study

Maintaining adequate pavement condition is critical to the safe and efficient operation of aircraft at airports. As noted in previous chapters, pavement maintenance is one of the costliest capital investments an airport makes. As a result, pavement management is required at all airports in both state and FAA grant assurances and is a PM in the 2020 CASP.

CDOT Division of Aeronautics funds and conducts regular safety and PCI inspections at 2020 CASP airports. The Division staff is trained to measure and rate airport pavements using the PCI industry standard so that maintenance and repair can be planned and implemented at the appropriate time during its lifecycle. Once the pavement data is collected, it is then provided to a consultant who develops the APMS program.

CDOT Division of Aeronautics should continue to perform regular runway, taxiway, and apron PCI inspections at 2020 CASP airports as well as continue to contract with a consultant to manage and develop the APMS program that breaks down pavement reports by airport and develops recommendations for maintaining the pavements in good condition. While the inspection and APMS program come at a cost, the cost is significantly less than the cost to rehabilitate or fully reconstruct an entire pavement section.

CDOT Division of Aeronautics should also consider creating incentives as well as a generic template for airports to implement a PMP. An airport PMP employs a system of evaluation tools and schedules for airports to maintain the pavement rehabilitation needs in the future. A PMP provides important indicators to understand current pavement conditions and uses a set of indicators to assess the rate of degradation to predict when rehabilitation should occur. Executing maintenance and rehabilitation (M&R) techniques to keep the pavement from dropping below fair or poor condition is estimated to be four or five times less expensive than rehabilitating pavement conditions when it drops below those thresholds[9].

CDOT Division of Aeronautics should also continue to support the Pavement Maintenance and Crack Sealant Program which aims to assist airports with preventative pavement maintenance. All airports, but especially small airports with limited capital funding, benefit from these programs.

10.12.2. CASP Update

The primary purpose of a system plan is to study the performance and interaction of an aviation system and identify airport needs. The plan guides decisions and educates those who oversee the system, including local, state, and federal policy makers. The last system plan completed for Colorado's aviation system was published in 2011. Since then, CDOT Division of Aeronautics initiated the 2020 CASP which evaluated Colorado system airport's 2018 existing conditions, demand, and needs over a 20-year planning horizon. The aviation industry is ever-changing, however, an update to the 2020 CASP would allow CDOT Division of Aeronautics to monitor how those changes affect the Colorado system. CDOT Division of Aeronautics should initiate an update of the 2020 CASP in the 2023-2025 timeframe.

10.12.3. CEIS Update

An aviation economic impact study quantifies the economic impacts of on-airport businesses, activities, and other spin-off or multiplier impacts of airports. Economic impact studies help communicate the benefits of airports, both quantitative and qualitative, and validate the continued public investment in an airport system. CDOT Division of Aeronautics published an economic impact study for Colorado airports in 2013 which reported that Colorado's airports produced a total annual economic output of $36.7 billion. The 2013 Economic Impact Study for Colorado Airports was updated by way of the 2020 Colorado Aviation Economic Impact Study (CEIS) which reported that by 2018, the total statewide annual airport economic impact (i.e. Business Revenues) increased to $48.6 billion. Due to the ever-changing aviation industry, these studies should be updated every three to five years. CDOT Division of Aeronautics should initiate an update of the 2020 CEIS in the 2023=2025 timeframe.

[9] FAA AC 150/5380-7B " Airport Pavement Management Program" October 2014: https://www.faa.gov/documentlibrary/media/advisory_circular/150-5380-7b.pdf

10.13. Policy and Investigation Recommendations

As noted in the prior section, CDOT Division of Aeronautics funds and promotes a multitude of programs and initiatives designed to strategically improve 2020 CASP airports. Based on the findings of the 2020 CASP, CDOT Division of Aeronautics should consider the following additional programs and studies to supplement the programs and initiatives funded to date, as well as the recommendations derived from PMs.

10.13.1. Snow Removal Equipment (SRE) Building Program

Many of the 2020 CASP airports experience a wide range of weather conditions including heavy snowfall during the winter months. Numerous Colorado airports accommodate access to world-renowned ski resorts and winter sports attractions making SRE a vital component to uninterrupted operations during the winter season, especially to continue bringing the many tourists that increase the state's economic impact. Based on analyses documented in Existing and Future System Performance Chapters, 44 percent of airports reported having a dedicated SRE building with a goal of 61 percent of airports having the facility in the future.

As noted in **Chapter 8. Future System Performance**, to improve overall system performance by meeting established future system performance targets, airports may need to identify existing facilities to convert into a dedicated SRE building or construct a completely new building for these purposes. However, SRE buildings are typically lower on the FAA CIP priority list, and with limited funding available to some airports, SRE buildings may not be feasible.

CDOT Division of Aeronautics could consider a statewide action or program that sets aside specific funding each year for the design and construction of dedicated SRE buildings at 2020 CASP airports. A standard design for an SRE building could be developed by CDOT for implementation at airports needing this facility. This standard design could reduce overall costs, however, individual airport needs may differ based on demand and geographic location (i.e. mountain airports with substantial operations may get priority over others).

10.13.2. GA Terminal Building Program

The 2020 CASP evaluated GA terminal buildings at all airports using size calculations (150 square feet) per peak number of passengers at each airport in 2018. As mentioned in **Section 10.5. Future Facility Needs**, GA terminal building needs were also evaluated based on forecast demand as reported in **Chapter 7. Aviation Demand Forecasts**.

In 2018, 58 percent of airports had an adequately sized GA terminal building compared to the 100 percent target established in Chapter 8. Future System Performance. Terminal building needs significantly increase once 2038 aviation demand forecasts are applied, justifying the need for new or expanded GA terminal buildings at many 2020 CASP airports.

Similar to dedicated SRE buildings, GA terminals are typically lower on the FAA CIP priority list, making them challenging to fund, especially at airports with limited financial resources. As such, CDOT Division of Aeronautics could consider a statewide action or program that sets aside specific funding each year for the design and construction of GA terminal buildings at 2020 CASP airports. The Division could also contract a design engineer to develop a standard GA terminal building template based on 2020 airport classifications as GA terminal sizes and needs at higher traffic airports would be more significant than at rural airports with less demand.

10.13.3. Denver Regional Demand/Capacity Study

As documented in **Chapter 8. Future System Performance**, annual service volume (ASV) is a planning estimate of the maximum number of annual operations that an airport can reasonably accommodate in a year. An ASV analysis is a high-level tool that provides a starting point for determining potential capacity needs that require further study. Per FAA Order 5090.5, *Formulation of NPIAS and ACIP*, the FAA recommends that planning for developments to increase capacity should be initiated once annual operations reach 60 percent of an airport's ASV. Airports with annual operations at or above this threshold may begin to experience operational delays and airfield congestion. Airports should initiate capacity improvement construction once the airport's ASV exceeds the 80 percent threshold.

By 2038, Greeley-Weld County (GXY) is projected to exceed the 60 percent planning threshold for capacity and in the same timeframe, four airports (DEN, FNL, Centennial [APA], and Rocky Mountain Metropolitan [BJC]) are anticipated to exceed the 80 percent capacity improvement construction threshold. Each of the five airports are located within proximity of the Denver metropolitan area which indicates that capacity isn't a statewide issue, but more of a localized, Denver-specific issue.

CDOT Division of Aeronautics should consider working with these airports as well as consider a more in-depth, regional demand/capacity study. Many of the airports with projected capacity issues have limited expansion potential, meaning capacity-increasing construction projects may not be feasible. The study should focus on identifying opportunities for regional capacity shifting, the feasibility of developing new facilities to add to the regional capacity, and facilitating discussions with airport users, the FAA, Air Traffic Control, and the public. The study should view the Denver-area airports as one network or system of airports, rather than several airports operating individually.

10.13.4. Approach Surface Obstruction Study

As noted in **Chapter 8. Future System Performance**, obstructions within the approach surface of a runway increase the risk of damage to property and potential injury or death to persons both in the plane and/or on the ground. They may take the form of man-made or naturally existing obstructions and coordination to either remove them or take extra precautions to avoid aircraft collisions with them are imperative to overall safety.

One out of every three airports in the Colorado system have obstructions that negatively impact the approach slopes to the primary runway. The number of airports affected by obstructions will most likely increase if an analysis were conducted to evaluate all runways in the system. As such, CDOT Division of Aeronautics should consider undertaking a detailed statewide approach surface obstruction study to identify the issues affecting so many airports, including identifying each obstruction, and making actionable recommendations to mitigate these hazards.

10.14. Recommended NPIAS Changes

The FAA has established a set of criteria to determine if an airport is eligible for entry into the NPIAS through FAA Order 5090.5, *Formulation of the NPIAS and ACIP,* which cancels FAA Order 5090.3C, *Field*

Formulation of the National Plan of Integrated Airport Systems (NPIAS) and FAA Order 5100.39A, *Airports Capital Improvement Plan.*

In reference to **Chapter 5. Airport Role and Classification Analysis**, 49 of the 66 2020 CASP airports met the eligibility requirements for inclusion into the 2019-2023 NPIAS. These airports were deemed as important to the national airport system and contributed integral aviation services or facilities to the nation's aviation system. Nine of the 49 airports were designated as Primary airports and were then subcategorized into Large, Medium, Small, and Nonhub dependent upon their share of total U.S. enplanements. The remaining 40 airports were designated as Nonprimary and subcategorized into Commercial Service, Reliever, and General Aviation airports.

Based on 2018 data used in **Chapter 7. Aviation Demand Forecasts** and NPIAS eligibility criteria identified in **Chapter 5. Airport Role and Classification Analysis**, two 2020 CASP airports appear eligible for consideration for inclusion into future NPIAS reports:

- Mineral County Memorial (C24)
- Springfield Municipal (8V7)

CDOT Division of Aeronautics should work closely with each airport's public sponsor to understand the implications and needs associated with becoming a NPIAS airport, including the pros and cons, as well as with the FAA before moving forward with NPIAS inclusion consideration.

10.15. Summary

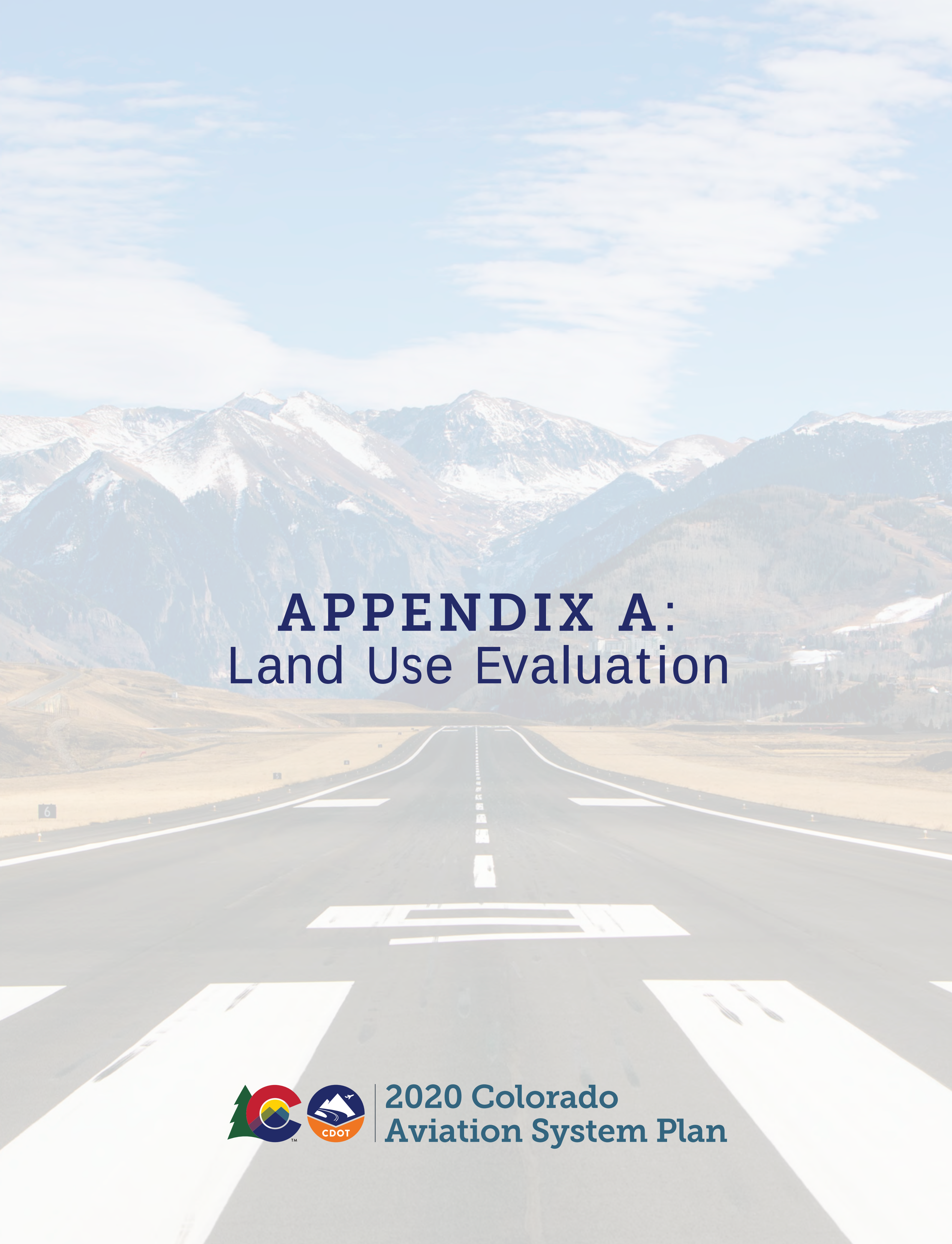
This chapter serves as the culmination of the 2020 CASP, presenting the system's financial needs and the associated recommendations and implementation plan. The project costs identified in this chapter are an important outcome of the 2020 CASP as they provide a complete picture of the resources needed to maintain the system compared to the average annual federal, state, and local investments. It is also important to recognize that Colorado's airports contribute much more to the economy of the state than the needs over the next 20 years as documented in the CASP. The CEIS demonstrated that in 2018, Colorado's airports provided a total annual economic impact of $48.6 billion. This economic impact varies per year based on increases and decreases in the aviation activities, however, when compared to the identified 20-year need and the average investment that has been made and is anticipated to continue, the aviation system generates more impact per year than is expended**. Table 10.28** summarizes and compares Colorado airports' 2018 economic impact, their annualized need, and average annual investment.

Table 10.28. Colorado Airports Annual Funding Gap

Metric	Amount
2018 Total Economic Impact	$48.6 Billion
2018 Total Project Needs	$88 Million
2018 Total Investment	$59.7 Million

Sources: CDOT Division of Aeronautics, 2018; Kimley-Horn, 2020

In addition to the needs and associated project costs, recommendations were developed as a result of a multi-year collaborative effort between CDOT Division of Aeronautics, the FAA, and various stakeholders represented on the Project Advisory Committee (PAC) for continuous system monitoring and improvement. The recommendations support CDOT's on-going programs and initiatives and also encourage additional follow-on studies as well as provide action items for airports and CDOT Division of Aeronautics to meet future performance targets. As noted above, the total need for CASP airports exceeds the total funding anticipated to be available for capital improvement projects. This further emphasizes the value of the 2020 CASP to CDOT Division of Aeronautics as future policies and programs are evaluated in terms of strategically and intentionally maximizing the available funding based on the 2020 CASP recommendations.



APPENDIX A:
Land Use Evaluation

2020 Colorado
Aviation System Plan

Appendix A. Land Use Evaluation

To accurately gauge the aviation system's alignment to its Safety and Efficiency goal, performance measures (PMs) and system indicators (SIs) were established in **Chapter 6. System Performance**. This appendix provides supplemental information related to the PM "Percent of Airports That Have Adopted Appropriate Land Use Controls." A high-level land use evaluation was conducted for each airport in the Colorado Aviation System Plan (CASP) to assess the existing land use conditions that goes beyond the airport-reported responses to the 2018 Inventory & Data Form.

A.1. Existing Land Use Evaluation

A cursory review and assessment of specific types of land use was conducted to provide greater context and understanding of the major land uses near CASP airports. This evaluation focused on the identification of land uses that are typically considered incompatible by the FAA near airports and aircraft operations. Incompatible land uses include buildings and structures whose height exceeds Part 77 standards as well as other types of development that may attract wildlife or large concentrations of people, are noise-sensitive, or cause visual obstructions. The land uses within the Part 77 surfaces and within the Runway Protection Zone (RPZ) were the focus of the evaluation.

Part 77 surfaces are defined by the FAA and are used by many jurisdictions to protect airports from encroachment, particularly from a height perspective. The size of Part 77 surfaces is dependent on each airport's runway types and visibility minima and therefore are not the same for all system airports. These surfaces are imaginary and include the following as portrayed in **Figure A.1**:

- **Primary Surface:** This surface (indicated in black) is longitudinally centered on the runway. The length of the Primary Surface is determined by existence of a prepared hard surface on the runway
- **Approach Surface:** The surface (indicated by blue lines) is longitudinally centered on the centerline of the runway. It then extends outward and upward from each end of the Primary Surface. The length and width of the Approach Surface is dependent upon the approach capabilities of that specific runway (visual approach, non-precision instrument approach, precision instrument approach)
- **Transitional Surface:** This surface (indicated by the yellow lines) extends outward and upward from the sides of Primary Surfaces and Approach Surfaces at a slope of 7:1 until it reaches the height of the Horizontal Surface
- **Horizontal Surface:** This surface (indicated by the innermost ring of red lines and highlighted in green) is positioned 150 feet above the established airport elevation. The perimeter of the Horizontal Plan is constructed by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway. Tangents then connect the adjacent arcs to form the Horizontal Surface
- **Conical Surface:** This surface (indicated by the outermost ring of red lines) extends outward and upward from the Horizontal Surface for a horizontal distance of 4,000 feet at a slope of 20:1

RPZs are trapezoidal areas located at each end of the runway that the FAA established to protect people on the ground and in the air near airports. The size of the RPZs differ throughout the system of airports and is determined based on the most demanding aircraft operating at each airport, approach types, visibility minima. The FAA encourages airports to have RPZs that are completely clear of any objects and, if possible, are controlled by the airport.

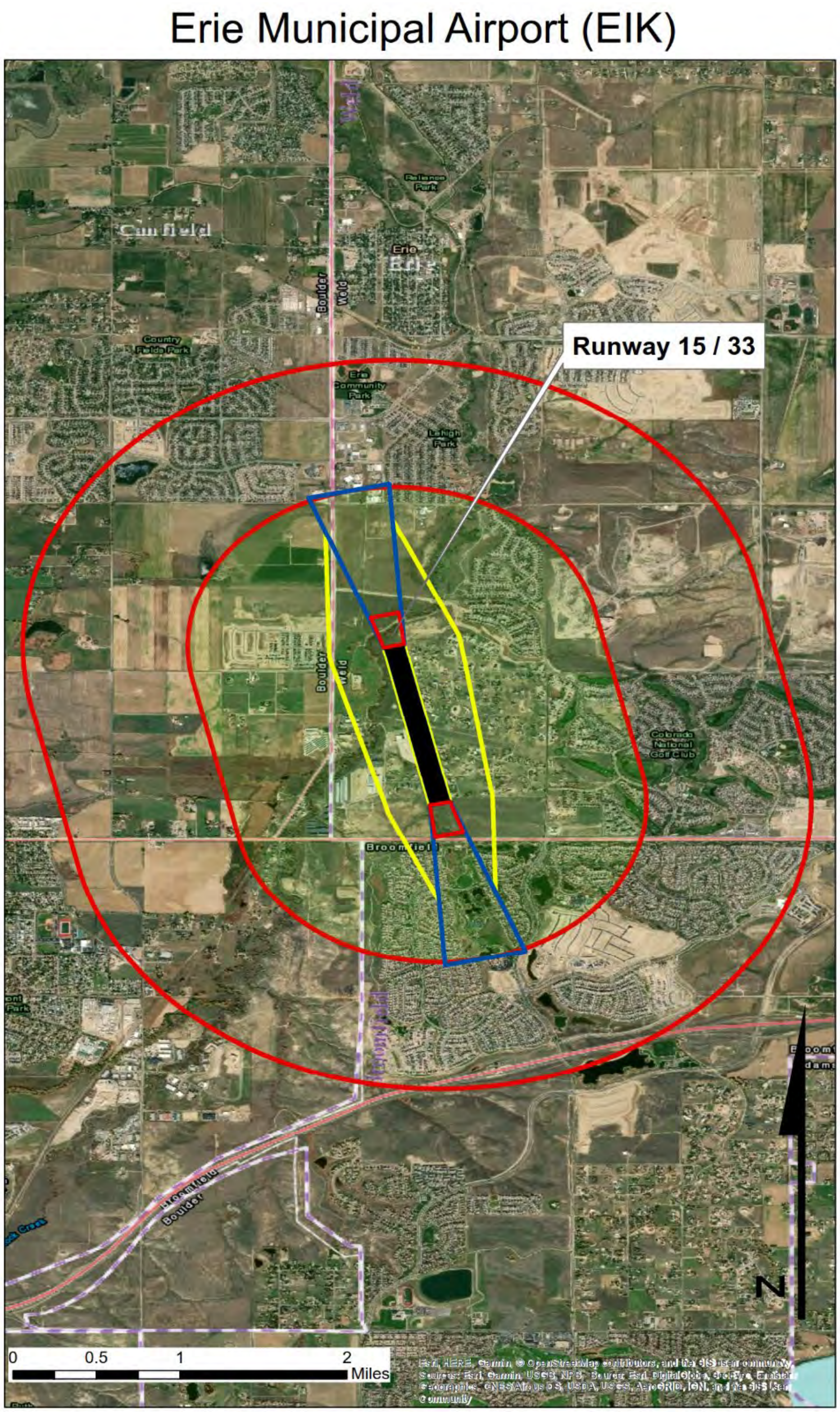
As part of the CASP, Part 77 surfaces and RPZs were identified for each airport and the associated boundaries for these were mapped on aerial imagery to provide a two-dimensional view. These maps provide the capability to hone in on uses within runway approaches and traffic patterns – the most critical areas for enhancing compatibility.[1] Each airport was provided an aerial map with these surfaces during the on-site visit as part of the discussion about current and potential future land use issues at or around their facility. Feedback from airport managers and sponsors during the on-site visit and aerial imagery via Google Earth provide the basis for this assessment.

The following sections review the presence of development often considered incompatible, including residential development, major developments, water bodies, and landfills within the two-dimensional Part 77 footprint and RPZs of each CASP airport maps.

Figure A.1 shows a sample of the land use compatibility maps that were developed for the analysis using Geographic Information Systems (GIS). The outer boundaries of the Part 77 surfaces are shown in red on the sample map for Erie Municipal Airport (EIK). The inner red trapezoidal shapes represent the RPZs.

[1] While Part 77 surfaces are three-dimensional in shape, the two-dimensional footprint of the surfaces are often used to define areas of close proximity to airports and identify the locations around the airport most susceptible to the impact of incompatible land uses.

Figure A.1. Land Use Compatibility Map Example



Source: Kimley-Horn, 2019

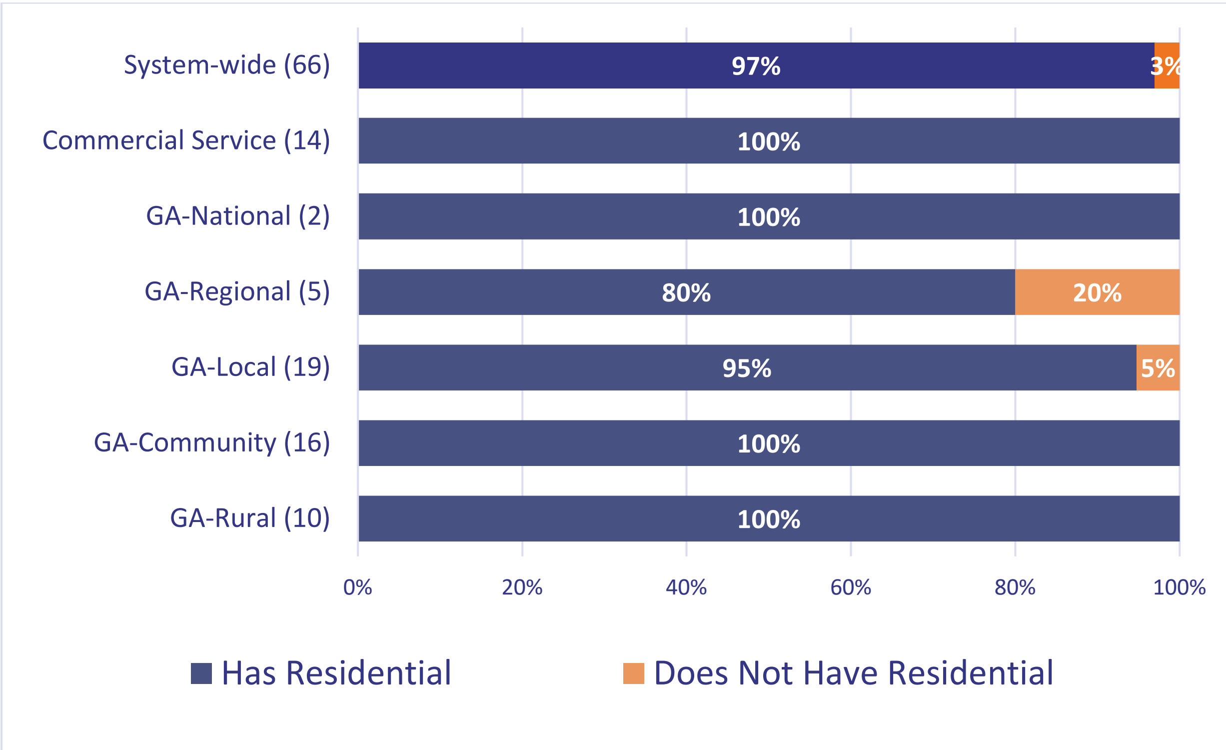
A.1.1. Residential Developments

One of the most commonly recognized incompatible land uses near airports is residential development, due to the levels of noise that are inherent to aircraft operations. This incompatibility is well documented, such as in ACRP Report 27: *Enhancing Airport Land Use Compatibility* and is recognized by the FAA as an impact to airport communities through FAR Part 150, *Airport Noise Compatibility Planning*. FAR Part 150 and the Aviation Safety and Noise Abatement Act of 1979 offer guidance limiting the growth and spread of noise incompatibility through the implementation of various programs and development of standards in which to measure noise. While additional noise incompatibility studies were not completed for the CASP, it is still a major component to consider in land use compatibility studies for airports. The industry-recognized noise impact threshold is 65 day-night average sound level (DNL); actual noise impact is subjective and based on perception. Aircraft noise may be highly disruptive to some nearby residents at lower or higher levels.

In addition to the noise factor, dense residential development (either multi-level, multi-family, or dense single-family neighborhoods) creates a large concentration of people in a single location. When located under a runway approach or within an aircraft traffic pattern, it can threaten the safety of residents in the event of an aircraft incident. For these reasons, residential development is typically considered incompatible near airports.

Based on the review of GIS maps created for each airport in the CASP, 97 percent of system-wide airports had some sort of residential development that existed within the boundaries of the Part 77 surfaces. All Commercial Service and GA-National airports and 80 percent of GA-Regional airports have residential developments within their Part 77 surfaces. Ninety-five percent of GA-Local, and all GA-Community and GA-Rural airports were identified as having residential uses within the boundaries of their Part 77 surfaces. **Figure A.2** presents the number of airports by classification that were identified as having residential developments within their Part 77 surfaces.

Figure A.2. Airports by Classification with Residential Developments within Part 77



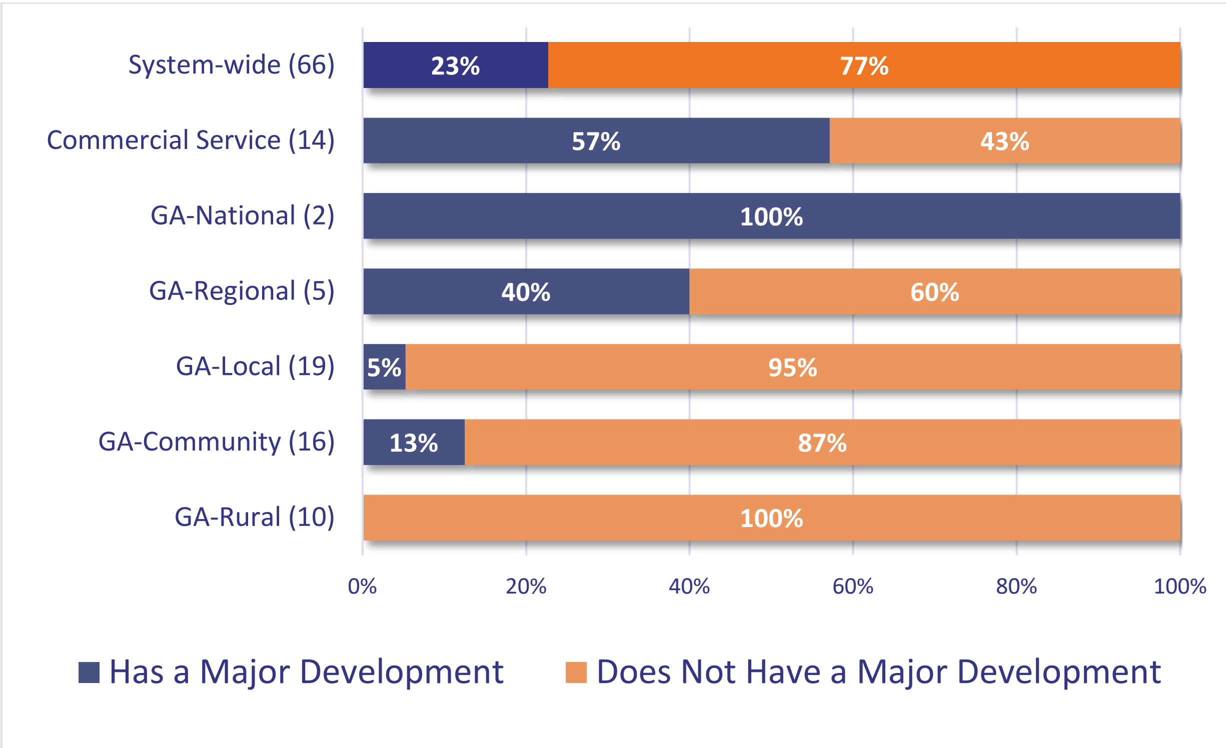
Sources: Google Earth; Kimley-Horn, 2019

A.1.2. Major Developments

The incompatible characteristics of major developments differ based on use. Educational and medical campuses, stadiums, malls, correctional facilities, and military installations attract high concentrations of people, posing a population density concern in proximity to airports. Educational facilities are susceptible to noise. Sports stadiums, major entertainment venues, correctional facilities, industrial uses, and military installations all require high intensity lighting that can cause light interference and distractions for pilots during takeoff or descent. Energy extraction, power plants and other industrial uses can generate smoke and steam that also may pose visual obstructions to pilots. Many of these uses can also include tall structures which may penetrate into the navigable airspace surrounding airports.

For all system-wide airports, 23 percent were identified as having some form of major development within their Part 77 surfaces. More than half of all Commercial Service airports and 100 percent of GA-National airports had a major development within this boundary. None of the GA-Rural airports had an existing major development within their Part 77 surfaces. **Figure A.3** summarizes the results of the analysis and depicts the airports by classification that have a major development within their Part 77 surfaces.

Figure A.3. Airports by Classification with a Major Development within Part 77



Sources: Google Earth; Kimley-Horn, 2019

A.1.3. Water

Water bodies in an airport's Part 77 surfaces, other than at a seaplane base, can pose multiple risks to aviation activity. First, water features can generate glare off the surface which can disorient and/or impact pilots' ability to locate and land their aircraft on the runway.[2] The presence of a water feature contributing to glare located directly ahead and slightly to the side of the pilot's vision on final approach causes the greatest impairment to their ability to see their instruments. According to the FAA's study on hazardous glare, bodies of water should be limited to at least 25 degrees from the direction of the pilots' viewpoints.

Second, the FAA's AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports* provides guidelines and considerations regarding bodies of water known to attract wildlife by providing a source of water and roosting habitats, especially for birds. This can lead to wildlife collisions on and around runways and in the airspace as birds and other wildlife travel to and from the water – sometimes between two or more bodies of water. Wildlife strikes result in expensive aircraft damage and pose serious threats to pilots, passengers, and at times, the nearby public.

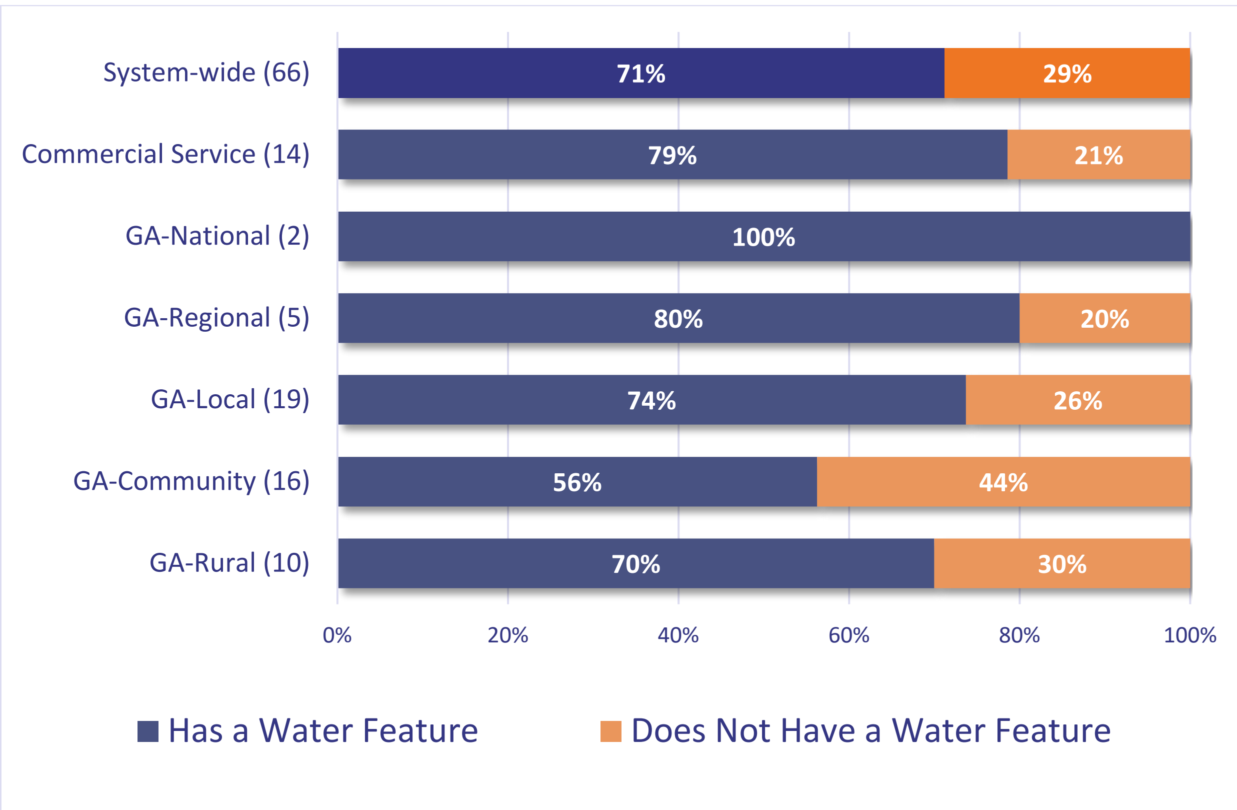
For this evaluation, water bodies are defined as lakes, reservoirs, rivers, and creeks that were clearly identifiable from a bird's eye view of the aerial images with the Part 77 surfaces overlaid. This does

[2] FAA "Evaluation of Glare as a Hazard for General Aviation Pilots on Final Approach." July 2015.

not imply that these are the only water features that can impact aircraft operations. Other smaller features, such as water detention/retention ponds and, open irrigation canals can also pose a threat to safe aircraft operations and should be carefully considered near airports.

System-wide, 71 percent of all airports had some form of body of water within their Part 77 surfaces. Seventy-nine percent of Commercial Service airports had a water feature within these boundaries. All GA-National and 80 percent of GA-Regional airports were identified as having a water feature within their imaginary surfaces. Seventy-four percent of GA-Local, more than half of GA-Community (56 percent), and 70 percent of GA-Rural airports had an existing water feature within their Part 77 surface. Of the 76 water features inventoried within Part 77 surfaces for airports, 13 were identified as manmade reservoirs and 63 as naturally occurring water bodies. Percentages of airports with water features identified within Part 77 surfaces are presented by classification in **Figure A.4**.

Figure A.4. Airports by Classification with an Existing Water Feature in Part 77 Surfaces



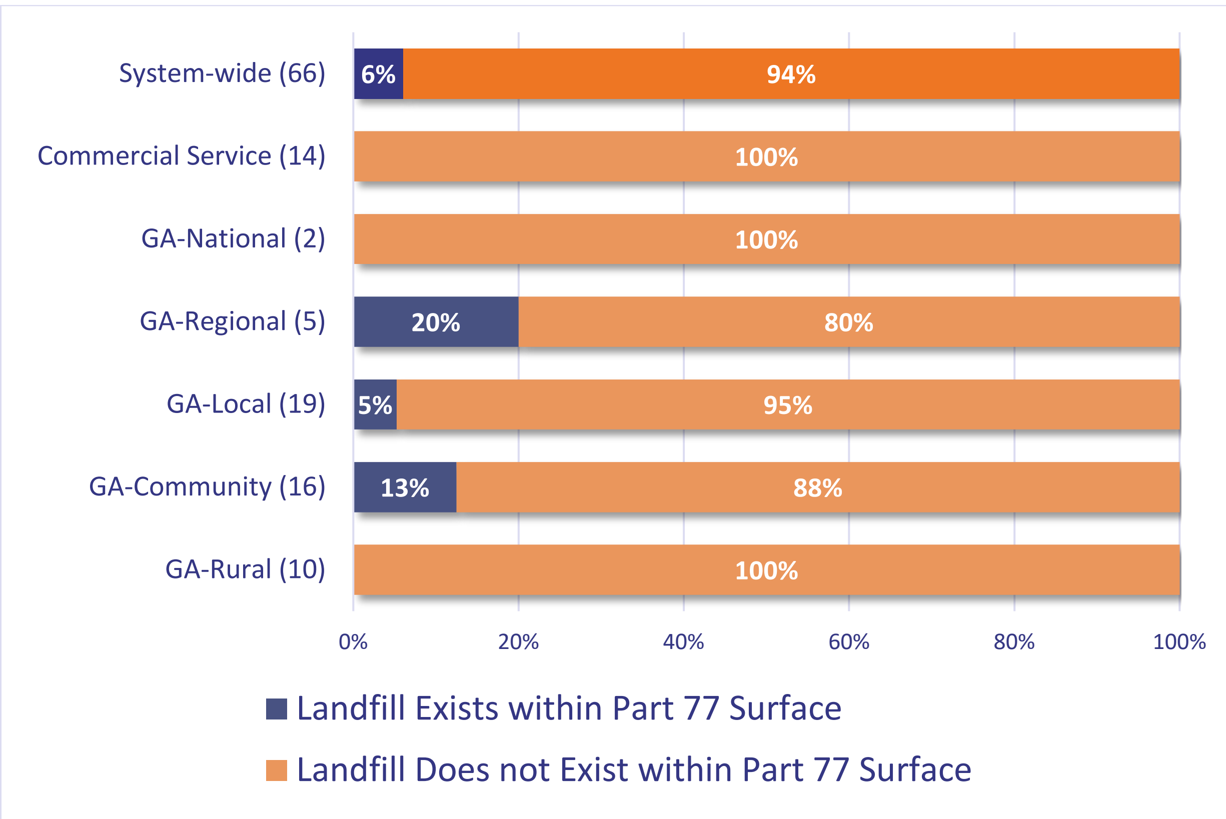
Sources: Google Earth; Kimley-Horn, 2019

A.1.4. Landfills

Similar to water bodies, landfills pose a significant threat to aircraft operations as they attract wildlife, particularly birds, increasing the chance for wildlife strikes. To limit the impact of these wildlife attractants, the FAA discourages the development of hazardous wildlife attractants within 5,000 feet of runways serving piston-powered aircraft, 10,000 feet of runways serving turbine-powered aircraft, and five miles away from any runway if they initiate bird movement across aircraft pathways and circulation.[3] Data obtained from the Colorado Department of Public Health and Environment (CDPHE) was used to determine the existence of landfill facilities within a five-mile buffer of Colorado system airports. The location of each landfill facility was then compared against the airport's land use compatibility map using Google Earth to determine if the landfill facility also fell within the Part 77 surface area. **Figure A.5** shows the findings of the analysis of landfills within Part 77 surfaces by airport classification.

Of the airports analyzed for the CASP, six percent or four airports system-wide have a landfill which exists within their Part 77 surfaces. Commercial Service, GA-National, and GA-Rural airports do not have landfills that exist within this boundary. Airport classifications that currently have a landfill within their Part 77 surfaces are GA-Regional, GA-Local, and GA-Community with 20 percent, five percent, and 13 percent, respectively.

Figure A.5. Percent of Airports by Classification with a Landfill within Part 77



Sources: CDPHE; Google Earth; Kimley-Horn, 2019

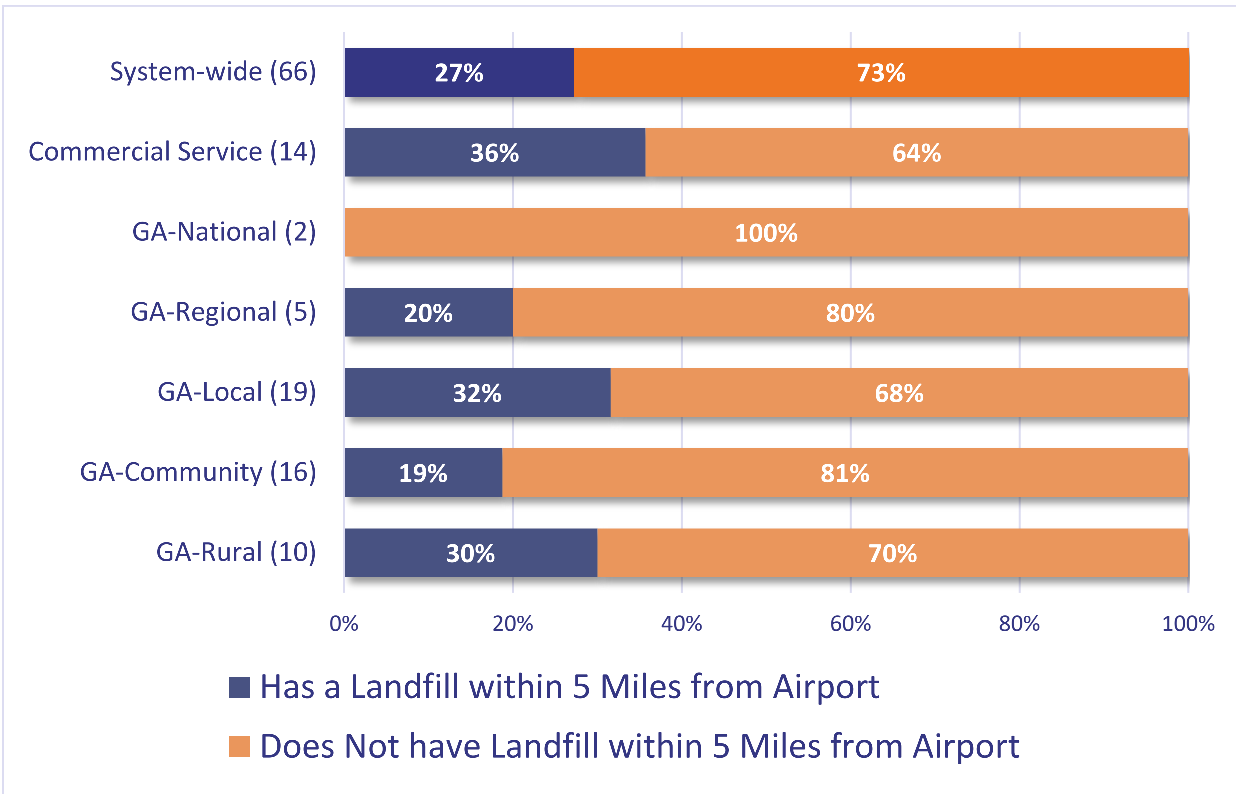
Upon increasing this distance to extend out to five statute miles from the airports' air operations area (AOA) per the direction of the FAA's AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports,* the number of airports that have a landfill within this proximity increases. An airport's AOA

[3] FAA AC 150/5200-33B *Hazardous Wildlife Attractants on or Near Airports*. August 2007.

incudes the area where aircraft operate, including runways, taxiways, aprons, and any other infrastructure within the secured and fenced-in area of an airport.

System-wide, the percent of airports with a landfill within five miles increased to 27 percent or 18 airports as a larger area is being evaluated. Commercial Service airports affected by landfills within five miles from their location increased to 36 percent. Thirty-two percent of GA-Local airports currently have a landfill within five statute miles from their AOA. It is important to note that it is unknown if any of the airports with landfills within the five-mile separation distances have been negatively impacted by bird movement. Therefore, it is possible that these landfills may not be directly generating wildlife issues despite their proximity to an airport**. Figure A.6** presents the results of airports with landfills within five statute miles from the end of their AOAs.

Figure A.6. Percent of Airports by Classification with a Landfill within Five Miles



Sources: CDPHE; Google Earth; Kimley-Horn, 2019

A.1.5. Runway Protection Zones

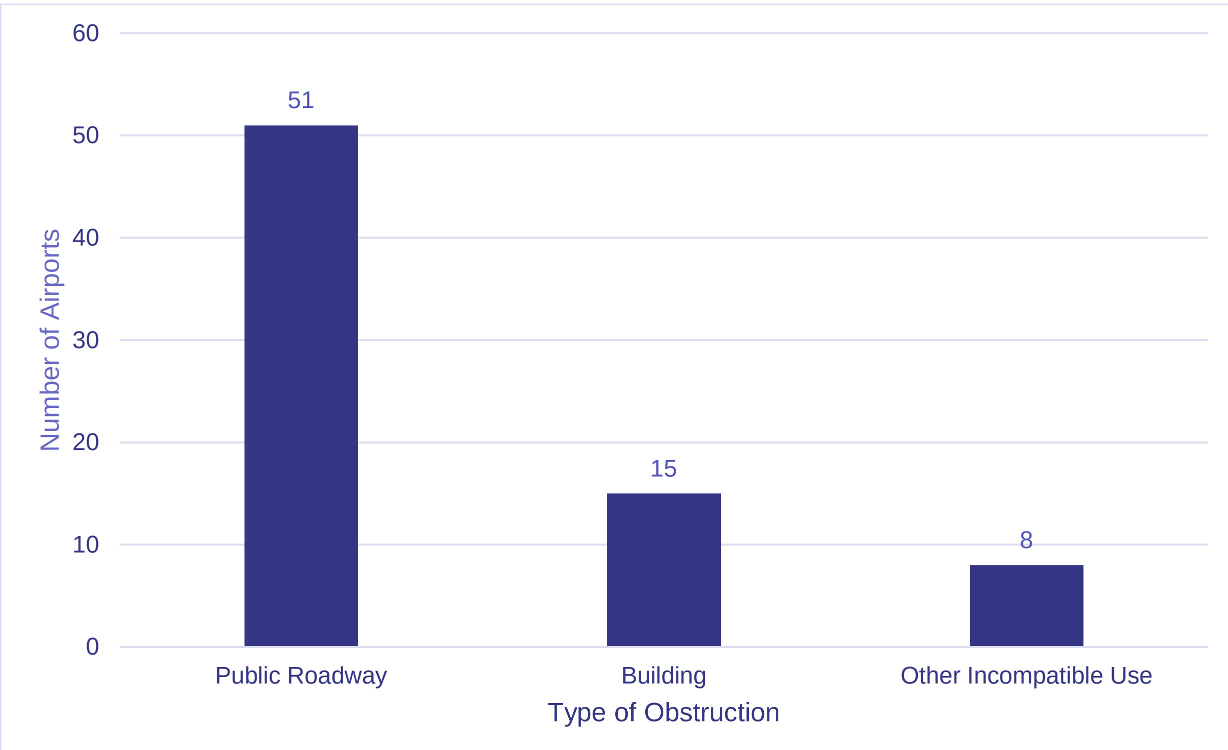
RPZs are trapezoidal areas located at either end of a runway and designed to accommodate the most demanding aircraft operating at each airport. RPZs are intended to minimize damage to people and property in the event of an aircraft overrun or undershoot.[4] According to FAA AC 150/5300-13A, Change 1, *Airport Design*, airports are recommended, if possible, to control the land within each RPZ. This

[4] FAA AC 150/5300-13A, Change 1, *Airport Design.* February 2014

gives airports the ability needed to maintain these critical safety areas clear of development and incompatible uses. Complete control over RPZs through fee simple ownership and avigation easements is not always possible for a variety of reasons. It is important to note that the FAA's guidance on RPZs has changed over time so land uses such as roadways, structures, and sometimes others that are now deemed incompatible (water bodies, residential developments, recreational facilities, etc.) were permitted based on prior guidance.

Figure A.7 shows the number of CASP airports that have public roadways, buildings, and/or an incompatible land use within their existing RPZs. The existence of one obstruction may not be exclusive of others (e.g., an airport that has a public roadway may also have a building in their RPZ) and therefore, a combination of obstructions may occur. Public roadways are the most common obstructions with 51 airports having some sort of public roadway in the RPZ. Fifteen airports were identified as having buildings, and eight had some other incompatible land use present.

Figure A.7. Evaluation of Incompatible Uses or Structures in RPZs



Sources: Google Earth; Kimley-Horn, 2019

As previously identified, existing public roadways, structures, or land uses may have been found to comply with earlier FAA regulations during their initial development. New research and airport planning practices have led to changes in FAA regulations regarding new development or modifications of existing land uses within RPZs. The FAA recommends coordination with the National Airport Planning and Environmental Division (APP-400) to ensure new development or modifications of existing development in RPZs conform with regulations and best practices when the following changes are made:[5]

- An airfield project is constructed (e.g., runway extension, runway shift)
- A change in the critical design aircraft is made that increases the RPZ dimensions
- A new or revised instrument approach procedure is implemented that increases the RPZ dimensions
- A local development proposal in the RPZ (either new or reconfigured) is submitted

New or proposed public roadways, structures, and land uses are ideally located outside of RPZs and if this is not possible, a full range of alternatives should be analyzed and coordinated with FAA to minimize the associated risks.

A.1.6. Close-In Obstructions

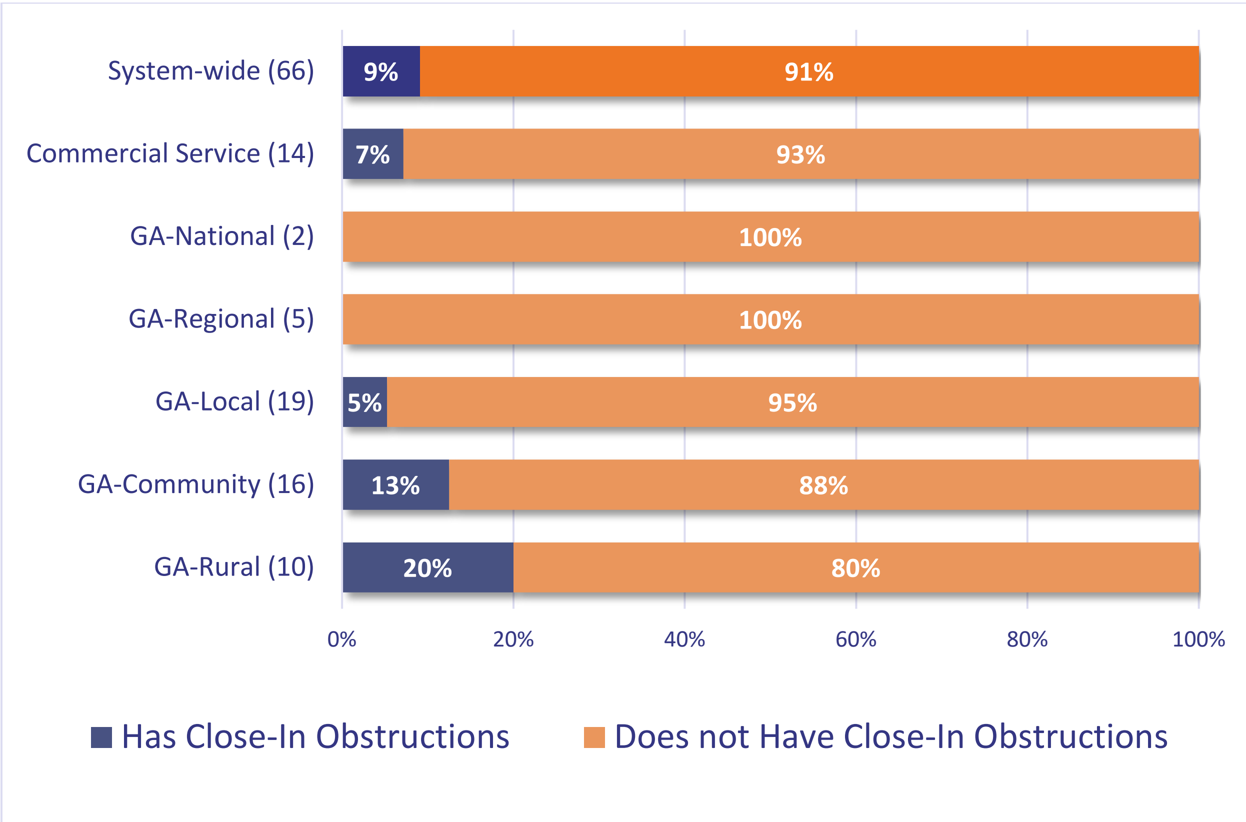
Data was gathered from each CASP airport's FAA Form 5010 Master Record to determine whether individual runway approaches were negatively impacted by incompatible land use. Obstacles existing within one nautical mile and less than 200 feet above the Departure End of Runway (DER) are considered "low, close-in obstructions." For pilots to safely clear these obstructions during take-off, the FAA recommends the following methods be followed:[6]

- Clear visibility of the obstruction to allow pilots to avoid and maneuver around the obstruction
- Perform early liftoff and ascent to safely clear the obstruction
- Note obstructions in the Takeoff Minimums and (Obstacle) Departure Procedures
- Consider turns or maneuvers during preflight planning to avoid the object if it is not visible during departure

For aircraft that liftoff close to the DER or climb at a minimum rate, it is critical to ensure that these additional rules are implemented to avoid impact. Additionally, it is also imperative to consider the close-in obstructions during Instrument Meteorological Conditions (IMC) where cloud ceiling and visibility can impact a pilot's ability to see and avoid the obstacle. **Figure A.8** shows the percentage of airports with close-in obstructions. Nine percent or six airports system-wide have a close-in obstruction. GA-National and GA-Regional airports do not have close-in obstructions affecting their airports. GA-Community and GA-Rural airports represent the classifications with the highest percentages of airports with close-in obstructions at 13 percent and 20 percent, respectively.

[5] FAA Memorandum Interim Guidance on Land Uses Within a Runway Protection Zone. September 2012.
[6] FAA-H-8038-16B *Instrument Procedures Handbook*. September 2017.

Figure A.8. Airports with Close-In Obstructions

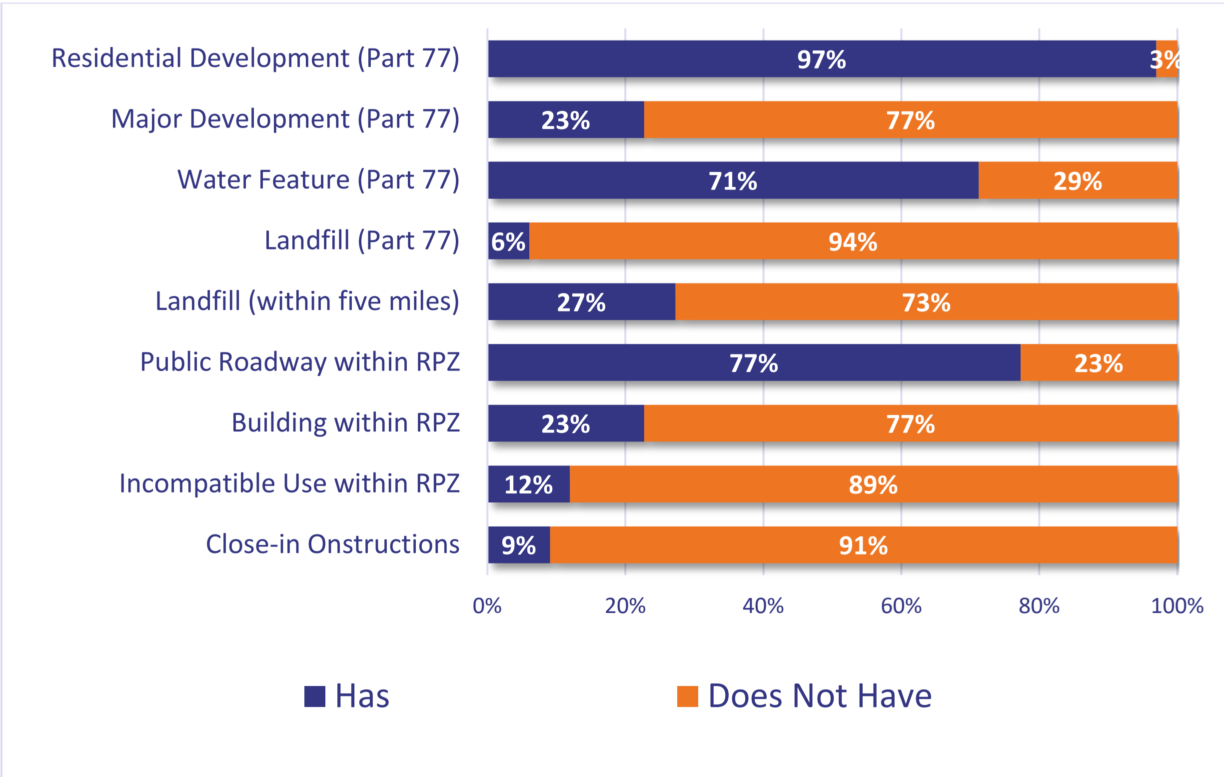


Source: FAA 5010 Master Record, 2019

A.2. Summary

This appendix identified various levels of incompatible uses which may negatively impact the safe and efficient operation of aircraft at CASP airports. Identification of incompatible land uses can lead to recommendations that airports can use to mitigate such occurrences in the future. All airports that indicated having land use controls (41) during the on-site visits were found to have some sort of incompatible land use present. **Figure A.9** summarizes the findings of the system-wide land use evaluation. **Table A.1** displays all the results of the land use evaluation for each airport. A check mark (✓) indicates that an incompatible land use was found during the land use evaluation.

Figure A.9. Land Use Evaluation Summary



Sources: Google Earth; 2018 Inventory & Data Form; FAA 5010 Master Record; Kimley-Horn, 2019

Table A.1. Summary of Airports' Land Use Evaluation

Associated City	Airport Name	FAA ID	Within Part 77				Landfill Within 5 Miles	Within RPZ			Close-in Obstructions
			Residential	Major Development	Water Feature	Landfill		Public Roadway	Building or Structure	Incompatible Land Use	
					Commercial Service						
Alamosa	San Luis Valley Regional	ALS	✓	✓	✓			✓			
Aspen	Aspen-Pitkin County	ASE	✓	✓	✓		✓				✓
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓			✓			
Cortez	Cortez Municipal	CEZ	✓				✓	✓			
Denver	Denver International	DEN	✓			✓	✓	✓			
Durango	Durango-La Plata County	DRO	✓	✓	✓						
Eagle	Eagle County Regional	EGE	✓		✓			✓			
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓	✓	✓						
Grand Junction	Grand Junction Regional	GJT	✓	✓				✓		✓	
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	✓	✓		✓	✓	✓	✓	
Hayden	Yampa Valley	HDN	✓	✓	✓			✓			
Montrose	Montrose Regional	MTJ	✓		✓		✓				
Pueblo	Pueblo Memorial	PUB	✓		✓			✓			
Telluride	Telluride Regional	TEX	✓		✓						
					GA-National						
Denver	Centennial	APA	✓	✓	✓			✓	✓	✓	
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	✓			✓		✓	
					GA-Regional						
Colorado Springs	Meadow Lake	FLY	✓		✓			✓			
Denver	Colorado Air and Space Port	CFO					✓	✓			
Greeley	Greeley-Weld County	GXY	✓	✓	✓			✓			
Longmont	Vance Brand	LMO	✓	✓	✓			✓			
Rifle	Rifle Garfield County	RIL	✓		✓			✓			
					GA-Local						
Boulder	Boulder Municipal	BDU	✓		✓			✓		✓	
Buena Vista	Central Colorado Regional	AEJ	✓		✓			✓			
Burlington	Kit Carson County	ITR	✓				✓				
Canon City	Fremont County	1V6	✓	✓	✓		✓				
Craig	Craig-Moffat	CAG	✓		✓		✓	✓		✓	
Del Norte	Astronaut Kent Rominger	RCV	✓					✓			
Delta	Blake Field	AJZ	✓		✓	✓	✓	✓			
Erie	Erie Municipal	EIK	✓		✓		✓	✓			
Fort Morgan	Fort Morgan Municipal	FMM	✓				✓	✓			

Associated City	Airport Name	FAA ID	Within Part 77				Landfill Within 5 Miles	Within RPZ			Close-in Obstructions
			Residential	Major Development	Water Feature	Landfill		Public Roadway	Building or Structure	Incompatible Land Use	
Glenwood Springs	Glenwood Springs Municipal	GWS	✓		✓			✓			✓
Kremmling	Mc Elroy Airfield	20V	✓		✓			✓	✓		
La Junta	La Junta Municipal	LHX	✓		✓			✓			
Lamar	Lamar Municipal	LAA	✓		✓			✓			
Limon	Limon Municipal	LIC	✓		✓			✓	✓	✓	
Pagosa Springs	Stevens Field	PSO	✓		✓			✓			
Salida	Harriet Alexander Field	ANK	✓		✓						
Steamboat Springs	Steamboat Springs	SBS	✓		✓			✓	✓		
Sterling	Sterling Municipal	STK	✓								
Walsenburg	Spanish Peaks Airfield	4V1						✓			
GA-Community											
Akron	Colorado Plains Regional	AKO	✓					✓	✓		
Creede	Mineral County Memorial	C24	✓		✓	✓	✓	✓			
Granby	Granby-Grand County	GNB	✓						✓	✓	
Holyoke	Holyoke	HEQ	✓					✓			
Las Animas	Las Animas-Bent County	7V9	✓		✓			✓			✓
Leadville	Lake County	LXV	✓		✓	✓	✓				
Meeker	Meeker/Coulter Field	EEO	✓	✓	✓						
Monte Vista	Monte Vista Municipal	MVI	✓					✓	✓		
Nucla	Hopkins Field	AIB	✓		✓						
Paonia	North Fork Valley	7V2	✓		✓			✓			✓
Rangely	Rangely	4V0	✓	✓	✓			✓			
Springfield	Springfield Municipal	8V7	✓					✓			
Trinidad	Perry Stokes	TAD	✓		✓			✓			
Westcliffe	Silver West	C08	✓		✓		✓	✓			
Wray	Wray Municipal	2V5	✓								
Yuma	Yuma Municipal	2V6	✓					✓	✓		
GA-Rural											
Blanca	Blanca	05V	✓		✓			✓	✓		
Brush	Brush Municipal	7V5	✓					✓	✓		✓
Center	Leach	1V8	✓						✓		
Eads	Eads Municipal	9V7	✓		✓		✓	✓	✓		
Haxtun	Haxtun Municipal	17V	✓					✓	✓		
Holly	Holly	K08	✓		✓		✓	✓			
Julesburg	Julesburg Municipal	7V8	✓		✓		✓	✓	✓		✓
La Veta	Cuchara Valley	07V	✓		✓			✓			

Associated City	Airport Name	FAA ID	Within Part 77				Landfill Within 5 Miles	Within RPZ			Close-in Obstructions
			Residential	Major Development	Water Feature	Landfill		Public Roadway	Building or Structure	Incompatible Land Use	
Saguache	Saguache Municipal	04V	✓		✓			✓			
Walden	Walden-Jackson County	33V	✓		✓			✓			
		System-wide Totals	**64**	**15**	**47**	**4**	**18**	**51**	**15**	**8**	**6**

Sources: Google Earth; FAA 5010 Master Record; Kimley-Horn, 2019

APPENDIX B:
Airport Report Cards

2020 Colorado Aviation System Plan

Appendix B. Airport Report Cards

Appendix B includes an airport-specific report card for each airport in the CASP. Report cards are organized in alphabetical order by the airport's associated city. This information is included at the top left of the report card, followed by the airport name, FAA ID, and the 2020 CASP state classification.

The report cards are directly associated with the Facility and Service Objectives discussed in **Chapter 6. Existing System Performance**. The following report cards individually document how each system airport performed related to facility and service objectives based on their airport role.

A few tips are provided below to guide understanding of how to interpret the report cards:

1. If the *current condition* is greater than or equal to the *airport role objective,* then the airport has met the 2020 objective.
2. The objective for *Runway Length* is not specified by length (in feet) across airport roles, and instead is based on either future Master Plan length, or if the runway can accommodate 100 percent or 95 percent of small aircraft adjusted for elevation and mean maximum daily temperature during the hottest month. For this reason, the length of the runway associated with the objective is included in parentheses after the current runway length condition to show how the existing condition compares to the objective length.
3. In some cases, GA–Community and GA–Rural airports have an objective of "maintain existing". This means that the current condition of the facility/service being evaluated has met the objective. Moreover, objectives identified as "based on community need" will always result in an airport meeting that objective.
4. The terminal building objective at Commercial Service airports is based on the Airport Research Cooperative Research (ACRP) *Report 25: Airport Passenger Terminal Planning and Design, Volume 1: Guidebook*. This ACRP report provides a table of typical sizes for new terminals for "smaller domestic", "larger domestic", and "international" airports. The typical sizes are provided in a range, and the minimum end of that range is used as the minimum required terminal square footage for this objective. Therefore, if the current condition of the airport's terminal square footage is greater than or equal to the minimum required terminal square footage (as provided by ACRP-25) then the airport meets this objective.
5. The terminal building objective at GA airports is based on an acceptable ratio of terminal square footage to passenger enplanements and itinerant operations. This was determined to be a ratio of 150 sq. ft per passenger. Therefore, if a GA airport's terminal building square footage is greater than or equal to the acceptable ratio, the airport is considered to meet this objective.
6. Apron tie-down objectives are based on the number of aircraft that resulted from summing a certain percentage of an airport's-based aircraft fleet and weekly average overnight transient fleet during peak season compared to the total tie down spaces available at the airport. GA–Rural are the exception where only based aircraft were considered, not transient. Therefore, if total tie down spaces are greater than or equal to the number of aircraft, then the airport has met this objective.

7. The hangar objective for Commercial Service, GA–National, GA–Regional, and GA–Local is based on an airport having enough based aircraft hangar space to accommodate a certain percentage of based aircraft AND enough transient aircraft hangar space to accommodate a certain percentage of transient aircraft. Therefore, if existing based aircraft hangar space is greater than or equal to the number of based aircraft, and transient hangar space is greater than or equal to the number of transient aircraft, the airport is considered to meet this objective.
8. Throughout the Facility and Service Objective analysis, maximum effort was placed in obtaining all pieces of data necessary to complete each airport report card. In rare situations where data was not obtained for an objective, the current condition will show "N/P" for "not provided" which results in a "N/A" or "not applicable" performance for that objective. Additionally, the few airports with turf or dirt runways will not have an associated runway strength or markings condition, which results in "N/A" for current condition and meeting the objective.

The tips above may be helpful interpreting the following report cards, especially as it relates to the following airport facilities: terminal space, apron tie-downs, and hangars, and for airports receiving an N/A result during this analysis. Please refer to these tips as necessary. **Table B.1** summarizes the facility and service objectives for each airport classification.

Table B.1. Colorado System Airport Facility and Service Objectives by Classification

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Airfield						
ARC	C-III/C-II*	C-II	B-II	B-II	B-I	B-I
Runway length	Align with Master Plan	Align with Master Plan	Align with Master Plan	Accommodate 100% of small aircraft adjusted for altitude and mean maximum daily temp during hottest month	Accommodate 75% small aircraft adjusted for altitude and mean maximum daily temp during hottest month	Maintain existing
Runway width	150 feet/100 feet	100 feet	75 feet	75 feet	60 feet	60 feet
Runway strength	60,000 pounds	60,000 pounds	30,000 pounds	30,000 pounds	12,500 pounds	12,500 pounds
Taxiway	Full parallel	Full parallel	Full parallel	Partial parallel	Turn-arounds	Maintain existing
Runway markings	Precision	Precision	Non-precision	Non-precision	Non-precision	Basic
Lighting/Navigational Aids (NAVAIDs)						
Approach	Precision	Precision	Non-precision with vertical guidance	Non-precision	Non-precision	Maintain existing
Visual aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Wind cone
Runway lighting	HIRL or MIRL	HIRL or MIRL	MIRL	MIRL	MIRL	Reflectors
Weather reporting	On-site ASOS or AWOS	On-site ASOS or AWOS	On-site ASOS or AWOS	On-site ASOS, AWOS, or Automated Unicom	On-site ASOS, AWOS, or Automated Unicom	Non-certified weather

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Acceptable ratio of GA terminal square footage to peak hour passengers	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Based on community need
Apron tie-downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	Tie-downs for 100% of based aircraft fleet
Hangars	Hangars for 80% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 60% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 60% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage	Hangars for 40% of based aircraft fleet plus weekly average overnight transient storage based on community needs	Based on community need
Maintenance/SRE storage building	Yes	Yes	Yes	Yes	Based on community need	Based on community need
Electric vehicle charging station	Yes	Yes	Yes	Yes	Based on community need	Based on community need

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Perimeter security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	AOA three-wire fencing with appropriate signage	AOA three-wire fencing with appropriate signage	AOA three-wire fencing with appropriate signage
Services/Other						
Jet A fuel	Full service	Full service	Full service	24/7 (self-serve or call out)	Based on community need	Based on community need
AvGas fuel	Full service	Full service	Full service	24/7 (self-serve or call out)	24/7 (self-serve or call out)	Based on community need
Aircraft de-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection	Dedicated de-icing area	Based on community need	Based on community need	Based on community need
Courtesy car	Yes	Yes	Yes	Yes	Yes	Based on community need
Sustainability plan	Yes	Yes	Yes	Based on community need	Based on community need	Based on community need

**Note: Runway design standards should be determined by individual airports based on airport-specific needs and aviation demand*

Source: Kimley-Horn, 2019

Associated City: Akron
Airport Name: Colorado Plains Regional
FAA Identifier: AKO
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	7,001 feet (5,900 feet)	Yes
Runway Width	60 feet	100 feet	Yes
Runway Strength	12,500 pounds	5,000 lbs SW; 85,000 lbs DW; 125,000 lbs 2	Yes
Taxiway	Turn-arounds	Partial parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 11; Total tie-down spaces: 18	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 6; Number of based aircraft hangar spaces: 12	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	Full service	Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Alamosa
Airport Name: San Luis Valley Regional
FAA Identifier: ALS
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	C-II				Yes
Runway Length	Align with Master Plan	8,519 feet (9,000 feet)				No
Runway Width	150 feet/100 feet	100 feet				Yes
Runway Strength	60,000 pounds	52,000 lbs SW; 70,000 lbs DW				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Precision	Precision				Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	ASOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	15,000 sq ft	Terminal building square footage:	8,400 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	9	Total tie-down spaces:	37	Yes
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	31	Number of based aircraft hangar spaces:	42	Yes
		50% of transient aircraft fleet:	1	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities without fluid collection				No
Courtesy Car	Yes	No				No
Sustainability Plan	Yes	N/P				N/A
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Aspen
Airport Name: Aspen-Pitkin County
FAA Identifier: ASE
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	D-III				Yes
Runway Length	Align with Master Plan	8,006 feet (9,310 feet)				No
Runway Width*	150 feet/100 feet	100 feet				No
Runway Strength	60,000 pounds	80,000 lbs SW; 100,000 lbs DW; 160,000 lbs 2D				Yes
Taxiway	Full parallel	Partial parallel				No
Runway Markings	Precision	Non-precision				No
Lighting/NAVAIDS						
Approach	Precision	Non-precision				No
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSF, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	MIRL				Yes
Weather Reporting	On-site ASOS or AWOS	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	144,000 sq ft	Terminal building square footage:	45,000 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	53	Total tie-down spaces:	104	Yes
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	72	Number of based aircraft hangar spaces:	0	No
		50% of transient aircraft fleet:	35	Number of transient aircraft hangar spaces:	5	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection				Yes
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	Yes				Yes
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

*Note: Runway meets widths for facility and service objective but does not meet widths per FAA guidance in FAA AC 150/5300-13A *Airport Design*

Associated City: Blanca
Airport Name: Blanca
FAA Identifier: 05V
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	A-I	No
Runway Length	Maintain existing	6,160 feet (6,100 feet)	Yes
Runway Width	60 feet	52 feet	No
Runway Strength	12,500 pounds	NA (Dirt)	N/A
Taxiway	Maintain existing	None	Yes
Runway Markings	Basic	N/A	N/A
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Rotating beacon, wind cone	Yes
Runway Lighting	Reflectors	None	No
Weather Reporting	Non-certified weather	None	No
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	Based on community need
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 0 Total Tie-Down Spaces: 0	Yes
Hangars	Based on community need	0	Based on community need
Dedicated Maintenance/SRE Storage Building	Based on community need	N/P	Based on community need
Electric Vehicle Charging Stations	Based on community need	N/P	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	None	No
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	Based on community need	Not available	Based on community need
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Based on community need	No	Based on community need
Sustainability Plan	Based on community need	N/P	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Boulder
Airport Name: Boulder Municipal
FAA Identifier: BDU
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-II	Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	4,100 feet (6,500 feet)	No
Runway Width	75 feet	75 feet	Yes
Runway Strength	30,000 pounds	16,000 lbs SW	No
Taxiway	Partial parallel	Full parallel	Yes
Runway Markings	Non-precision	Visual	No
Lighting/NAVAIDS			
Approach	Non-precision	Visual	No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 60 / Total tie-down spaces: 68	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 58 / Number of based aircraft hangar spaces: 104 25% of transient aircraft fleet: 2 / Number of transient aircraft hangar spaces: 0	No
Dedicated Maintenance/SRE Storage Building	Yes	No	No
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service	Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Brush
Airport Name: Brush Municipal
FAA Identifier: 7V5
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-I	Yes
Runway Length	Maintain existing	4,300 feet (4,300 feet)	Yes
Runway Width	60 feet	60 feet	Yes
Runway Strength	12,500 pounds	6,000 lbs SW	No
Taxiway	Maintain existing	Connector	Yes
Runway Markings	Basic	Visual	Yes
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Wind cone	Yes
Runway Lighting	Reflectors	Reflectors	Yes
Weather Reporting	Non-certified weather	Automated UNICOM	Yes
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	**Based on community need**
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 5 Total Tie-Down Spaces: 6	Yes
Hangars	Based on community need	5	**Based on community need**
Dedicated Maintenance/SRE Storage Building	Based on community need	No	**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No	**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	Not available	**Based on community need**
AvGas Fuel	Based on community need	Not available	**Based on community need**
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Based on community need	Yes	**Based on community need**
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Buena Vista
Airport Name: Central Colorado Regional
FAA Identifier: AEJ
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-II	Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	8,303 feet (9,400 feet)	No
Runway Width	75 feet	75 feet	Yes
Runway Strength	30,000 pounds	30,000 lbs SW; 30,000 lbs DW	Yes
Taxiway	Partial parallel	Full parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 3 / Total tie-down spaces: 20	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 2 / Number of based aircraft hangar spaces: 30 25% of transient aircraft fleet: 1 / Number of transient aircraft hangar spaces: 4	Yes
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service	Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Assisted Self-Service	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Burlington
Airport Name: Kit Carson County
FAA Identifier: ITR
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,199 feet (5,600 feet)				No
Runway Width	75 feet	75 feet				Yes
Runway Strength	30,000 pounds	17,000 lbs SW; 17,000 lbs DW				No
Taxiway	Partial parallel	Partial parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	12	Total tie-down spaces:	13	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	12	Number of based aircraft hangar spaces:	18	Yes
		25% of transient aircraft fleet:	0	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	24/7 (Self-Serve or Call Out)				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Canon City
Airport Name: Fremont County
FAA Identifier: 1V6
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,399 feet (6,700 feet)				No
Runway Width	75 feet	75 feet				Yes
Runway Strength	30,000 pounds	26,000 lbs SW; 26,000 lbs DW				No
Taxiway	Partial parallel	Full parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with only restrooms and Wi-Fi				No
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	41	Total tie-down spaces:	49	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	41	Number of based aircraft hangar spaces:	81	No
		25% of transient aircraft fleet:	1	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	Yes				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Center
Airport Name: Leach
FAA Identifier: 1V8
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	A-I	No
Runway Length	Maintain existing	7,000 feet (7,000 feet)	Yes
Runway Width	60 feet	50 feet	No
Runway Strength	12,500 pounds	12,000 lbs SW	No
Taxiway	Maintain existing	Connector	Yes
Runway Markings	Basic	Non-standard	No
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Rotating beacon, VGSIs, wind cone	Yes
Runway Lighting	Reflectors	LIRL	Yes
Weather Reporting	Non-certified weather	None	No
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	Yes	**Based on community need**
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 4; Total Tie-Down Spaces: 5	Yes
Hangars	Based on community need	16	**Based on community need**
Dedicated Maintenance/SRE Storage Building	Based on community need	No	**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No	**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	None	No
Services/Other			
Jet A Fuel	Based on community need	Not available	**Based on community need**
AvGas Fuel	Based on community need	24/7 (Self-Serve or Call Out)	**Based on community need**
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Based on community need	No	**Based on community need**
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Colorado Springs
Airport Name: Colorado Springs Municipal
FAA Identifier: COS
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	C-IV				Yes
Runway Length	Align with Master Plan	13,501 feet (13,500 feet)				Yes
Runway Width	150 feet/100 feet	150 feet				Yes
Runway Strength	60,000 pounds	120,000 lbs SW; 250,000 lbs DW; 550,000 2D; 1,120,000 lbs 2D2D				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Precision	Precision				Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	216,000 sq ft	Terminal building square footage:	294,495 sq ft	Yes
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet[1] plus 50% transient aircraft fleet:	116	Total tie-down spaces:	34	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	164	Number of based aircraft hangar spaces:	140	No
		50% of transient aircraft fleet:	75	Number of transient aircraft hangar spaces:	15	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection				Yes
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Colorado Springs
Airport Name: Meadow Lake
FAA Identifier: FLY
2020 CASP Classification: GA-Regional

Objective Category	GA-Regional Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-I				No
Runway Length	Align with Master Plan	6,000 feet (6,000 feet)				Yes
Runway Width	75 feet	60 feet				No
Runway Strength	30,000 pounds	12,500 lbs SW				No
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Non-precision	Visual				No
Lighting/NAVAIDS						
Approach	Non-precision with vertical guidance	Visual				No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs				No
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3PT				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	No restroom or pilot lounge available. Facility has Wi-Fi				No
Apron Tie-Downs	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	40% of based aircraft fleet plus 50% transient aircraft fleet:	183	Total tie-down spaces:	93	No
Hangars	Hangars for 60% of based aircraft fleet and 50% of weekly average overnight transient storage	60% of based aircraft fleet:	270	Number of based aircraft hangar spaces:	417	No
		50% of transient aircraft fleet:	3	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Terminal apron area security fencing				No
Services/Other						
Jet A Fuel	Full service	Not available				No
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	Dedicated de-icing area	None				No
Courtesy Car	Yes	No				No
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Cortez
Airport Name: Cortez Municipal
FAA Identifier: CEZ
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	B-II				No
Runway Length	Align with Master Plan	7,205 feet (7,205 feet)				Yes
Runway Width	150 feet/100 feet	100 feet				Yes
Runway Strength	60,000 pounds	40,000 lbs SW; 56,000 lbs DW				No
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Non-precision				No
Lighting/NAVAIDS						
Approach	Precision	Non-precision				No
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				No
Runway Lighting	HIRL or MIRL	MIRL				Yes
Weather Reporting	On-site ASOS or AWOS	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	15,000 sq ft	Terminal building square footage:	3,500 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	7	Total tie-down spaces:	47	Yes
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	25	Number of based aircraft hangar spaces:	30	Yes
		50% of transient aircraft fleet:	0	Number of transient aircraft hangar spaces:	3	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter wildlife fencing				No
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities without fluid collection				No
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Craig
Airport Name: Craig-Moffat
FAA Identifier: CAG
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,606 feet (6,500 feet)				No
Runway Width	75 feet	100 feet				Yes
Runway Strength	30,000 pounds	35,000 lbs SW; 40,000 lbs DW				Yes
Taxiway	Partial parallel	Turn-arounds				No
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	15	Total tie-down spaces:	16	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	13	Number of based aircraft hangar spaces:	20	No
		25% of transient aircraft fleet:	2	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Creede
Airport Name: Mineral County Memorial
FAA Identifier: C24
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-I	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,880 feet (>10,000 feet)	No
Runway Width	60 feet	60 feet	Yes
Runway Strength	12,500 pounds	12,500 lbs SW	Yes
Taxiway	Turn-arounds	Connector	Yes
Runway Markings	Non-precision	Visual	No
Lighting/NAVAIDS			
Approach	Non-precision	Visual	No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Wind cone	No
Runway Lighting	MIRL	None	No
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	None	No
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms and pilot lounge	No
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 7 Total tie-down spaces: 8	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 4 Number of based aircraft hangar spaces: 10	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)	Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Del Norte
Airport Name: Astronaut Kent Rominger
FAA Identifier: RCV
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-II	Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,051 feet (9,200 feet)	No
Runway Width	75 feet	75 feet	Yes
Runway Strength	30,000 pounds	12,500 lbs SW	No
Taxiway	Partial parallel	Partial parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, REILs, VGSIs, wind cone	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3PT	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with Wi-Fi	No
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 21 Total tie-down spaces: 16	No
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 20 Number of based aircraft hangar spaces: 45 25% of transient aircraft fleet: 1 Number of transient aircraft hangar spaces: 0	No
Dedicated Maintenance/SRE Storage Building	Yes	No	No
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	Partial perimeter wildlife fencing	No
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Not available	No
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Delta
Airport Name: Blake Field
FAA Identifier: AJZ
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-II	Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,598 feet (6,500 feet)	No
Runway Width	75 feet	75 feet	Yes
Runway Strength	30,000 pounds	30,000 lbs SW; 30,000 lbs DW	Yes
Taxiway	Partial parallel	Partial parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 35; Total tie-down spaces: 21	No
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 33; Number of based aircraft hangar spaces: 64 25% of transient aircraft fleet: 2; Number of transient aircraft hangar spaces: 6	Yes
Dedicated Maintenance/SRE Storage Building	Yes	No	No
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service	Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Denver
Airport Name: Centennial
FAA Identifier: APA
2020 CASP Classification: GA-National

<table>
<tr><th>Objective Category</th><th>GA-National Objective</th><th colspan="4">Current Condition</th><th>Meets 2020 Objective?</th></tr>
<tr><td colspan="7">Airfield</td></tr>
<tr><td>ARC</td><td>C-II</td><td colspan="4">D-III</td><td>Yes</td></tr>
<tr><td>Runway Length</td><td>Align with Master Plan</td><td colspan="4">10,001 feet (10,001 feet)</td><td>Yes</td></tr>
<tr><td>Runway Width*</td><td>100 feet</td><td colspan="4">100 feet</td><td>Yes</td></tr>
<tr><td>Runway Strength</td><td>60,000 pounds</td><td colspan="4">56,000 lbs SW; 75,000 lbs DW</td><td>Yes</td></tr>
<tr><td>Taxiway</td><td>Full parallel</td><td colspan="4">Full parallel</td><td>Yes</td></tr>
<tr><td>Runway Markings</td><td>Precision</td><td colspan="4">Precision</td><td>Yes</td></tr>
<tr><td colspan="7">Lighting/NAVAIDS</td></tr>
<tr><td>Approach</td><td>Precision</td><td colspan="4">Precision</td><td>Yes</td></tr>
<tr><td>Visual Aids</td><td>ALS, rotating beacon, lighted wind cone, REILs, VGSIs</td><td colspan="4">MALSR, rotating beacon, lighted wind cone, REILs, VGSIs</td><td>Yes</td></tr>
<tr><td>Runway Lighting</td><td>HIRL or MIRL</td><td colspan="4">MIRL</td><td>Yes</td></tr>
<tr><td>Weather Reporting</td><td>On-site ASOS or AWOS</td><td colspan="4">ASOS</td><td>Yes</td></tr>
<tr><td colspan="7">Airport Facilities</td></tr>
<tr><td>Terminal (CS and/or GA)</td><td>Acceptable ratio of terminal square footage to passenger enplanements and itinerant operations</td><td>150 Sq Ft/person</td><td>40,721 sq ft</td><td>Terminal building square footage:</td><td>60,100 sq ft</td><td>Yes</td></tr>
<tr><td>Apron Tie-Downs</td><td>Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season</td><td>40% of based aircraft fleet plus 50% transient aircraft fleet:</td><td>440</td><td>Total tie-down spaces:</td><td>263</td><td>No</td></tr>
<tr><td rowspan="2">Hangars</td><td rowspan="2">Hangars for 60% of based aircraft fleet and 50% of weekly average overnight transient storage</td><td>60% of based aircraft fleet:</td><td>528</td><td>Number of based aircraft hangar spaces:</td><td>559</td><td rowspan="2">No</td></tr>
<tr><td>50% of transient aircraft fleet:</td><td>88</td><td>Number of transient aircraft hangar spaces:</td><td>33</td></tr>
<tr><td>Dedicated Maintenance/SRE Storage Building</td><td>Yes</td><td colspan="4">Yes</td><td>Yes</td></tr>
<tr><td>Electric Vehicle Charging Stations</td><td>Yes</td><td colspan="4">No</td><td>No</td></tr>
<tr><td>Perimeter Security</td><td>Full perimeter fencing with security gates and appropriate signage</td><td colspan="4">Full perimeter fencing with security gates and appropriate signage</td><td>Yes</td></tr>
<tr><td colspan="7">Services/Other</td></tr>
<tr><td>Jet A Fuel</td><td>Full service</td><td colspan="4">Full service</td><td>Yes</td></tr>
<tr><td>AvGas Fuel</td><td>Full service</td><td colspan="4">Full service</td><td>Yes</td></tr>
<tr><td>Aircraft De-icing</td><td>De-icing facilities including fluid collection</td><td colspan="4">De-icing facilities without fluid collection</td><td>No</td></tr>
<tr><td>Courtesy Car</td><td>Yes</td><td colspan="4">Yes</td><td>Yes</td></tr>
<tr><td>Sustainability Plan</td><td>Yes</td><td colspan="4">Yes</td><td>Yes</td></tr>
<tr><td colspan="7">Minimums for All Airports</td></tr>
<tr><td>Restroom (24-hr accessible)</td><td>Cell Phone Service</td><td colspan="4">Airport Layout Plan (ALP)</td><td>Wi-Fi Service</td></tr>
</table>

*Note: Runway meets widths for facility and service objective but does not meet widths per FAA guidance in FAA AC 150/5300-13A Airport Design

Associated City: Denver
Airport Name: Rocky Mountain Metropolitan
FAA Identifier: BJC
2020 CASP Classification: GA-National

Objective Category	GA-National Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-II	C-II				Yes
Runway Length	Align with Master Plan	9,000 feet (14,000 feet)				No
Runway Width	100 feet	100 feet				Yes
Runway Strength	60,000 pounds	65,000 lbs SW; 105,000 lbs DW; 150,000 lbs 2D				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Precision	Precision				Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage to passenger enplanements and itinerant operations	150 Sq Ft/person	20,926 sq ft	Terminal building square footage:	25,000 sq ft	Yes
Apron Tie-Downs	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	40% of based aircraft fleet plus 50% transient aircraft fleet:	308	Total tie-down spaces:	280	No
Hangars	Hangars for 60% of based aircraft fleet and 50% of weekly average overnight transient storage	60% of based aircraft fleet:	255	Number of based aircraft hangar spaces:	199	No
		50% of transient aircraft fleet:	138	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities without fluid collection				No
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	Yes				Yes
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Denver
Airport Name: Denver International
FAA Identifier: DEN
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	C-III/C-II	D-VI	Yes
Runway Length	Align with Master Plan	12,000 feet (Unknown)	Yes
Runway Width	150 feet/100 feet	150 feet	Yes
Runway Strength	60,000 pounds	116,000 lbs SW; 240,000 lbs DW; 515,000 lbs 2D; 1,085,000 lbs 2D2D	Yes
Taxiway	Full parallel	Full parallel	Yes
Runway Markings	Precision	Precision	Yes
Lighting/NAVAIDS			
Approach	Precision	Precision	Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	HIRL or MIRL	HIRL	Yes
Weather Reporting	On-site ASOS or AWOS	ASOS	Yes
Airport Facilities			
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage: 3,136,000 sq ft Terminal building square footage: 7,496,972 sq ft	Yes
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet: 29 Total tie-down spaces: 12	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet: 2 Number of based aircraft hangar spaces: 3 50% of transient aircraft fleet: 28 Number of transient aircraft hangar spaces: 3	No
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	Yes	Yes
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Yes
Services/Other			
Jet A Fuel	Full service	Full service	Yes
AvGas Fuel	Full service	Full service	Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection	Yes
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Yes	Yes	Yes
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Denver
Airport Name: Colorado Air and Space Port
FAA Identifier: CFO
2020 CASP Classification: GA-Regional

Objective Category	GA-Regional Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	C-II				Yes
Runway Length	Align with Master Plan	8,000 feet (8,000 feet)				Yes
Runway Width	75 feet	100 feet				Yes
Runway Strength	30,000 pounds	28,000 lbs SW; 40,000 lbs DW				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Non-precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision with vertical guidance	Precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms and pilot lounge				No
Apron Tie-Downs	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	40% of based aircraft fleet plus 50% transient aircraft fleet:	184	Total tie-down spaces:	260	Yes
Hangars	Hangars for 60% of based aircraft fleet and 50% of weekly average overnight transient storage	60% of based aircraft fleet:	261	Number of based aircraft hangar spaces:	291	No
		50% of transient aircraft fleet:	10	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Partial perimeter 3-wire fencing				No
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	Dedicated de-icing area	Dedicated de-icing area				Yes
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				Yes
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Durango
Airport Name: Durango-La Plata County
FAA Identifier: DRO
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	D-IV				Yes
Runway Length	Align with Master Plan	9,201 feet (9,900 feet)				No
Runway Width	150 feet/100 feet	150 feet				Yes
Runway Strength	60,000 pounds	95,000 lbs SW; 150,000 lbs DW; 210,000 lbs 2D				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Precision	Precision				Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	54,000 sq ft	Terminal building square footage:	36,617 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	23	Total tie-down spaces:	62	Yes
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	51	Number of based aircraft hangar spaces:	66	No
		50% of transient aircraft fleet:	10	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities without fluid collection				No
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Eads
Airport Name: Eads Municipal
FAA Identifier: 9V7
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	A-I	No
Runway Length	Maintain existing	3,860 feet (3,860 feet)	Yes
Runway Width	60 feet	60 feet	Yes
Runway Strength	12,500 pounds	N/P	N/A
Taxiway	Maintain existing	Connector	Yes
Runway Markings	Basic	None	No
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Lighted wind cone	Yes
Runway Lighting	Reflectors	MIRL	Yes
Weather Reporting	Non-certified weather	None	No
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	Based on community need
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 9 Total Tie-Down Spaces: 3	No
Hangars	Based on community need	9	Based on community need
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	None	No
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	Based on community need	Not available	Based on community need
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Based on community need	Yes	Based on community need
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Eagle
Airport Name: Eagle County Regional
FAA Identifier: EGE
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	C-III/C-II	D-IV	Yes
Runway Length	Align with Master Plan	9,000 feet (10,000 feet)	No
Runway Width	150 feet/100 feet	150 feet	Yes
Runway Strength	60,000 pounds	75,000 lbs SW; 140,000 DW; 255,000 lbs 2D	Yes
Taxiway	Full parallel	Full parallel	Yes
Runway Markings	Precision	Non-precision	No
Lighting/NAVAIDS			
Approach	Precision	Non-precision	No
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	HIRL or MIRL	HIRL	Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3PT	Yes
Airport Facilities			
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage: 108,000 sq ft Terminal building square footage: 120,000 sq ft	Yes
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet: 43 Total tie-down spaces: 10	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet: 73 Number of based aircraft hangar spaces: 84 50% of transient aircraft fleet: 24 Number of transient aircraft hangar spaces: 25	Yes
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Yes
Services/Other			
Jet A Fuel	Full service	Full service	Yes
AvGas Fuel	Full service	Full service	Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection	Yes
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Yes	Yes	Yes
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Erie
Airport Name: Erie Municipal
FAA Identifier: EIK
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-I	No
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	4,700 feet (6,500 feet)	No
Runway Width	75 feet	60 feet	No
Runway Strength	30,000 pounds	12,500 lbs SW	No
Taxiway	Partial parallel	Full parallel	Yes
Runway Markings	Non-precision	Visual	No
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3PT	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 106 Total tie-down spaces: 78	No
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 104 Number of based aircraft hangar spaces: 214 25% of transient aircraft fleet: 3 Number of transient aircraft hangar spaces: 2	No
Dedicated Maintenance/SRE Storage Building	Yes	No	No
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	Minimal fencing	No
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service	Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Fort Collins/Loveland
Airport Name: Northern Colorado Regional
FAA Identifier: FNL
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objectve	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	C-III				Yes
Runway Length	Align with Master Plan	8,500 feet (9,500 - 10,000 feet)				No
Runway Width*	150 feet/100 feet	100 feet				No
Runway Strength	60,000 pounds	50,000 lbs SW, 65,000 lbs DW; 130,000 lbs 2D				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Precision	Precision				Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3PT				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	15,000 sq ft	Terminal building square footage:	4,020 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	54	Total tie-down spaces:	46	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	204	Number of based aircraft hangar spaces:	212	No
		50% of transient aircraft fleet:	3	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	Yes				Yes
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities without fluid collection				No
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Fort Morgan
Airport Name: Fort Morgan Municipal
FAA Identifier: FMM
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-II	Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,731 feet (5,900 feet)	No
Runway Width	75 feet	75 feet	Yes
Runway Strength	30,000 pounds	30,000 lbs SW	Yes
Taxiway	Partial parallel	Turn-arounds	No
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 17; Total tie-down spaces: 13	No
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 16; Number of based aircraft hangar spaces: 27 25% of transient aircraft fleet: 1; Number of transient aircraft hangar spaces: 0	No
Dedicated Maintenance/SRE Storage Building	Yes	No	No
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	None	No
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service	Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Glenwood Springs
Airport Name: Glenwood Springs Municipal
FAA Identifier: GWS
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	3,305 feet (7,200 feet)				No
Runway Width	75 feet	50 feet				No
Runway Strength	30,000 pounds	15,000 lbs SW				No
Taxiway	Partial parallel	Full parallel				Yes
Runway Markings	Non-precision	Visual				No
Lighting/NAVAIDS						
Approach	Non-precision	Visual				No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	VGSIs, wind cone				No
Runway Lighting	MIRL	None				No
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	Automated UNICOM				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	None				No
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	35	Total tie-down spaces:	30	No
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	35	Number of based aircraft hangar spaces:	64	No
		25% of transient aircraft fleet:	1	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	24/7 (Self-Serve or Call Out)				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Granby
Airport Name: Granby-Grand County
FAA Identifier: GNB
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-I	B-II				Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,001 feet (>10,000 feet)				No
Runway Width	60 feet	75 feet				Yes
Runway Strength	12,500 pounds	12,500 lbs SW; 12,500 lbs DW				Yes
Taxiway	Turn-arounds	Partial parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Visual				No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3PT				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restroom and pilot lounge				No
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet:	18	Total tie-down spaces:	20	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet:	10	Number of based aircraft hangar spaces:	49	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	Yes				Based on community need
Electric Vehicle Charging Stations	Based on community need	No				Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)				Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-Icing	Based on community need	None				Based on community need
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				Based on community need
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Grand Junction
Airport Name: Grand Junction Regional
FAA Identifier: GJT
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	D-III				Yes
Runway Length	Align with Master Plan	10,501 feet (10,501 feet)				Yes
Runway Width	150 feet/100 feet	150 feet				Yes
Runway Strength	60,000 pounds	110,000 lbs SW; 180,000 lbs DW; 260,000 lbs 2D				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Precision	Precision				Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	108,000 sq ft	Terminal building square footage:	76,000 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	59	Total tie-down spaces:	65	Yes
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	101	Number of based aircraft hangar spaces:	120	Yes
		50% of transient aircraft fleet:	33	Number of transient aircraft hangar spaces:	120	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection				Yes
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Greeley
Airport Name: Greeley-Weld County
FAA Identifier: GXY
2020 CASP Classification: GA-Regional

Objective Category	GA-Regional Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	C-II	Yes
Runway Length	Align with Master Plan	10,000 feet (10,000 feet)	Yes
Runway Width	75 feet	100 feet	Yes
Runway Strength	30,000 pounds	30,000 lbs SW; 45,000 lbs DW	Yes
Taxiway	Full parallel	Full parallel	Yes
Runway Markings	Non-precision	Precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision with vertical guidance	Precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3PT	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, pilot lounge, and Wi-Fi	Yes
Apron Tie-Downs	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	40% of based aircraft fleet plus 50% transient aircraft fleet: 88; Total tie-down spaces: 44	No
Hangars	Hangars for 60% of based aircraft fleet and 50% of weekly average overnight transient storage	60% of based aircraft fleet: 121; Number of based aircraft hangar spaces: 218 50% of transient aircraft fleet: 7; Number of transient aircraft hangar spaces: 8	Yes
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Yes
Services/Other			
Jet A Fuel	Full service	Full service	Yes
AvGas Fuel	Full service	Full service	Yes
Aircraft De-icing	Dedicated de-icing area	Dedicated de-icing area	Yes
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Yes	No	No
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Gunnison
Airport Name: Gunnison-Crested Butte Regional
FAA Identifier: GUC
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	C-IV				Yes
Runway Length	Align with Master Plan	9,400 feet (9,400 feet)				Yes
Runway Width	150 feet/100 feet	150 feet				Yes
Runway Strength	60,000 pounds	75,000 lbs SW; 160,000 lbs DW; 250,000 2D				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Precision	Precision				Yes
Lighting/NAVAIDS						
Approach	Precision	Precision				Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSF, rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3PT				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	54,000 sq ft	Terminal building square footage:	34, 800 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	27	Total tie-down spaces:	25	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	25	Number of based aircraft hangar spaces:	10	No
		50% of transient aircraft fleet:	20	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	None				No
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Haxtun
Airport Name: Haxtun Municipal
FAA Identifier: 17V
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	A-I	No
Runway Length	Maintain existing	3,860 feet (3,860 feet)	Yes
Runway Width	60 feet	40 feet	No
Runway Strength	12,500 pounds	N/P	N/A
Taxiway	Maintain existing	None	Yes
Runway Markings	Basic	Visual	Yes
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Lighted wind cone	Yes
Runway Lighting	Reflectors	Reflectors	Yes
Weather Reporting	Non-certified weather	None	No
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	Based on community need
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 1 Total Tie-Down Spaces: 1	Yes
Hangars	Based on community need	2	Based on community need
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	None	No
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	Based on community need	Not available	Based on community need
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Based on community need	Yes	Based on community need
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Hayden
Airport Name: Yampa Valley
FAA Identifier: HDN
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	C-III/C-II	C-IV	Yes
Runway Length	Align with Master Plan	10,000 feet (10,000 feet)	Yes
Runway Width	150 feet/100 feet	150 feet	Yes
Runway Strength	60,000 pounds	75,000 lbs SW; 170,000 lbs DW; 260,000 2D	Yes
Taxiway	Full parallel	Full parallel	Yes
Runway Markings	Precision	Precision	Yes
Lighting/NAVAIDS			
Approach	Precision	Precision	Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSF, rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	HIRL or MIRL	HIRL	Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3PT	Yes
Airport Facilities			
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage: 108,000 sq ft; Terminal building square footage: 71,695 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet: 6; Total tie-down spaces: 7	Yes
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet: 10; Number of based aircraft hangar spaces: 4; 50% of transient aircraft fleet: 3; Number of transient aircraft hangar spaces: 4	No
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Yes
Services/Other			
Jet A Fuel	Full service	Full service	Yes
AvGas Fuel	Full service	Full service	Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection	Yes
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Yes	No	No
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Holly
Airport Name: Holly
FAA Identifier: K08
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	A-I	No
Runway Length	Maintain existing	4,140 feet (4,140 feet)	Yes
Runway Width	60 feet	40 feet	No
Runway Strength	12,500 pounds	NA (Dirt)	N/A
Taxiway	Maintain existing	Turn-arounds	Yes
Runway Markings	Basic	N/A	N/A
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Wind cone	Yes
Runway Lighting	Reflectors	Reflectors	Yes
Weather Reporting	Non-certified weather	None	No
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	Based on community need
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 1 Total Tie-Down Spaces: 3	Yes
Hangars	Based on community need	5	Based on community need
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	None	No
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	Based on community need	24/7 (Self-Serve or Call Out)	Based on community need
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Based on community need	No	Based on community need
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Holyoke
Airport Name: Holyoke
FAA Identifier: HEQ
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-I	B-II				Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,000 feet (5,000 feet)				Yes
Runway Width	60 feet	75 feet				Yes
Runway Strength	12,500 pounds	12,500 lbs SW				Yes
Taxiway	Turn-arounds	Partial parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet:	9	Total tie-down spaces:	8	No
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet:	6	Number of based aircraft hangar spaces:	17	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No				Based on community need
Electric Vehicle Charging Stations	Based on community need	No				Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)				Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				Based on community need
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				Based on community need
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Julesburg
Airport Name: Julesburg
FAA Identifier: 7V8
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-I	Yes
Runway Length	Maintain existing	4,100 feet (4,100 feet)	Yes
Runway Width	60 feet	60 feet	Yes
Runway Strength	12,500 pounds	12,000 lbs SW	No
Taxiway	Maintain existing	Partial parallel	Yes
Runway Markings	Basic	Non-standard	No
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Rotating beacon, lighted wind cone	Yes
Runway Lighting	Reflectors	MIRL	Yes
Weather Reporting	Non-certified weather	None	No
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	**Based on community need**
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 5 Total Tie-Down Spaces: 1	No
Hangars	Based on community need	5	**Based on community need**
Dedicated Maintenance/SRE Storage Building	Based on community need	No	**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No	**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	None	No
Services/Other			
Jet A Fuel	Based on community need	Not available	**Based on community need**
AvGas Fuel	Based on community need	Not available	**Based on community need**
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Based on community need	Yes	**Based on community need**
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Kremmling
Airport Name: Mc Elroy Airfield
FAA Identifier: 20V
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-II	Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,540 feet (9,100 feet)	No
Runway Width	75 feet	75 feet	Yes
Runway Strength	30,000 pounds	46,000 lbs SW; 68,000 lbs DW	Yes
Taxiway	Partial parallel	Turn-arounds	No
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 13; Total tie-down spaces: 21	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 11; Number of based aircraft hangar spaces: 18 25% of transient aircraft fleet: 2; Number of transient aircraft hangar spaces: 1	No
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service	Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: La Junta
Airport Name: La Junta Municipal
FAA Identifier: LHX
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,849 feet (5,400 feet)				Yes
Runway Width	75 feet	75 feet				Yes
Runway Strength	30,000 pounds	30,000 lbs SW; 50,000 lbs DW; 90,000 lbs 2D				Yes
Taxiway	Partial parallel	Full parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	13	Total tie-down spaces:	17	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	12	Number of based aircraft hangar spaces:	16	Yes
		25% of transient aircraft fleet:	1	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: La Veta
Airport Name: Cuchara Valley
FAA Identifier: 07V
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	A-I	No
Runway Length	Maintain existing	5,798 feet (5,798 feet)	Yes
Runway Width	60 feet	60 feet	Yes
Runway Strength	12,500 pounds	N/P	N/A
Taxiway	Maintain existing	Connector	Yes
Runway Markings	Basic	Visual	Yes
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Rotating, beacon, wind cone	Yes
Runway Lighting	Reflectors	MIRL	Yes
Weather Reporting	Non-certified weather	None	No
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	Based on community need
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 2 Total Tie-Down Spaces: 4	Yes
Hangars	Based on community need	2	Based on community need
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	Terminal apron area 3-wire fencing	No
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	Based on community need	Not available	Based on community need
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Based on community need	Yes	Based on community need
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Lamar
Airport Name: Lamar Municipal
FAA Identifier: LAA
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,304 feet (5,200 feet)				Yes
Runway Width	75 feet	100 feet				Yes
Runway Strength	30,000 pounds	45,000 lbs SW; 55,000 lbs DW; 100,000 lbs 2D				Yes
Taxiway	Partial parallel	Full parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	15	Total tie-down spaces:	27	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	14	Number of based aircraft hangar spaces:	34	Yes
		25% of transient aircraft fleet:	1	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service				Yes
Aircraft De-icing	Based on community need	No				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Las Animas
Airport Name: Las Animas-Bent County
FAA Identifier: 7V9
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-I	B-I				Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	3,870 feet (5,200 feet)				No
Runway Width	60 feet	40 feet				No
Runway Strength	12,500 pounds	5,000 lbs SW				No
Taxiway	Turn-arounds	Turn-arounds				Yes
Runway Markings	Non-precision	Visual				No
Lighting/NAVAIDS						
Approach	Non-precision	Visual				No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Lighted wind cone, REILs				No
Runway Lighting	MIRL	HIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	None				No
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	None				No
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet:	7	Total tie-down spaces:	6	No
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet:	5	Number of based aircraft hangar spaces:	8	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	N/P				Based on community need
Electric Vehicle Charging Stations	Based on community need	No				Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	Based on community need	Not available				Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Not available				No
Aircraft De-icing	Based on community need	None				Based on community need
Courtesy Car	Yes	No				No
Sustainability Plan	Based on community need	No				Based on community need
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Leadville
Airport Name: Lake County
FAA Identifier: LXV
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,400 feet (>10,000 feet)	No
Runway Width	60 feet	75 feet	Yes
Runway Strength	12,500 pounds	20,000 lbs SW; 20,000 lbs DW	Yes
Taxiway	Turn-arounds	Partial parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 4; Total tie-down spaces: 10	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 2; Number of based aircraft hangar spaces: 8	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	Yes	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)	Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	Yes	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Limon
Airport Name: Limon Municipal
FAA Identifier: LIC
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-I	No
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	4,700 feet (6,100 feet)	No
Runway Width	75 feet	60 feet	No
Runway Strength	30,000 pounds	12,500 lbs SW	No
Taxiway	Partial parallel	Partial parallel	Yes
Runway Markings	Non-precision	Visual	No
Lighting/NAVAIDS			
Approach	Non-precision	Visual	No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 11 Total tie-down spaces: 20	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 11 Number of based aircraft hangar spaces: 18 25% of transient aircraft fleet: 0 Number of transient aircraft hangar spaces: 0	Yes
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	Not available	No
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Longmont
Airport Name: Vance Brand
FAA Identifier: LMO
2020 CASP Classification: GA-Regional

Objective Category	GA-Regional Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Align with Master Plan	4,799 feet (6,390 feet)				No
Runway Width	75 feet	75 feet				Yes
Runway Strength	30,000 pounds	30,000 lbs SW				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Non-precision	Visual				No
Lighting/NAVAIDS						
Approach	Non-precision with vertical guidance	Non-precision				No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs				No
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms and pilot lounge				No
Apron Tie-Downs	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	40% of based aircraft fleet plus 50% transient aircraft fleet:	124	Total tie-down spaces:	48	No
Hangars	Hangars for 60% of based aircraft fleet and 50% of weekly average overnight transient storage	60% of based aircraft fleet:	177	Number of based aircraft hangar spaces:	271	No
		50% of transient aircraft fleet:	6	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Partial perimeter wildlife fencing				No
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	Dedicated de-icing area	None				No
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Meeker
Airport Name: Meeker/Coulter Field
FAA Identifier: EEO
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,503 feet (7,700 feet)	No
Runway Width	60 feet	100 feet	Yes
Runway Strength	12,500 pounds	30,000 lbs SW; 60,000 lbs DW	Yes
Taxiway	Turn-arounds	Partial parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 7; Total tie-down spaces: 10	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 4; Number of based aircraft hangar spaces: 12	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No	**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No	**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)	**Based on community need**
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Monte Vista
Airport Name: Monte Vista Municipal
FAA Identifier: MVI
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-I	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,901 feet (9,100 feet)	No
Runway Width	60 feet	60 feet	Yes
Runway Strength	12,500 pounds	12,500 lbs SW	Yes
Taxiway	Turn-arounds	Connector	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	None	No
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restroom and pilot lounge	No
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 10; Total tie-down spaces: 13	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 6; Number of based aircraft hangar spaces: 16	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)	Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	No	No
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Montrose
Airport Name: Montrose Regional
FAA Identifier: MTJ
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objectve	Current Condition	Meets 2020 Objective?
Airfield			
ARC	C-III/C-II	D-IV	Yes
Runway Length	Align with Master Plan	10,000 feet (10,000 feet)	Yes
Runway Width	150 feet/100 feet	150 feet	Yes
Runway Strength	60,000 pounds	75,000 lbs SW; 190,000 lbs DW; 265,000 lbs 2D	Yes
Taxiway	Full parallel	Full parallel	Yes
Runway Markings	Precision	Precision	Yes
Lighting/NAVAIDS			
Approach	Precision	Precision	Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	HIRL or MIRL	HIRL	Yes
Weather Reporting	On-site ASOS or AWOS	ASOS	Yes
Airport Facilities			
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage: 72,000 sq ft Terminal building square footage: 35,000 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet: 27 Total tie-down spaces: 20	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet: 65 Number of based aircraft hangar spaces: 111 50% of transient aircraft fleet: 10 Number of transient aircraft hangar 25	Yes
Dedicated Maintenance/SRE Storage Building	Yes	No	No
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Yes
Services/Other			
Jet A Fuel	Full service	Full service	Yes
AvGas Fuel	Full service	Full service	Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection	Yes
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Yes	No	No
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Nucla
Airport Name: Hopkins Field
FAA Identifier: AIB
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,210 feet (7,450 feet)	No
Runway Width	60 feet	75 feet	Yes
Runway Strength	12,500 pounds	9,000 lbs SW	No
Taxiway	Turn-arounds	Connector	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Visual	No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 7; Total tie-down spaces: 12	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 4; Number of based aircraft hangar spaces: 12	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No	**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No	**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)	**Based on community need**
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Pagosa Springs
Airport Name: Stevens Field
FAA Identifier: PSO
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	C-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	8,100 feet (9,000 feet)				No
Runway Width	75 feet	100 feet				Yes
Runway Strength	30,000 pounds	59,000 lbs SW; 70,000 lbs DW				Yes
Taxiway	Partial parallel	Full parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	22	Total tie-down spaces:	23	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	20	Number of based aircraft hangar spaces:	54	No
		25% of transient aircraft fleet:	2	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	24/7 (Self-Serve or Call Out)				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	N/P				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Paonia
Airport Name: North Fork Valley
FAA Identifier: 7V2
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-I	A-I				No
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	4,500 feet (7,150 feet)				No
Runway Width	60 feet	60 feet				Yes
Runway Strength	12,500 pounds	21,000 lbs SW				Yes
Taxiway	Turn-arounds	Turn-arounds				Yes
Runway Markings	Non-precision	Visual				No
Lighting/NAVAIDS						
Approach	Non-precision	Visual				No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Lighted wind cone, VGSIs				No
Runway Lighting	MIRL	HIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	None				No
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	None				No
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet:	14	Total tie-down spaces:	27	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet:	8	Number of based aircraft hangar spaces:	12	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No				**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No				**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	Based on community need	Not available				**Based on community need**
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Pueblo
Airport Name: Pueblo Memorial
FAA Identifier: PUB
2020 CASP Classification: Commercial Service

Objective Category	Commercial Service Objectve	Current Condition	Meets 2020 Objective?
Airfield			
ARC	C-III/C-II	C-III	Yes
Runway Length	Align with Master Plan	10,496 feet (10,496 feet)	Yes
Runway Width	150 feet/100 feet	150 feet	Yes
Runway Strength	60,000 pounds	75,000 lbs SW; 170,000 lbs DW; 250,000 lbs 2D	Yes
Taxiway	Full parallel	Full parallel	Yes
Runway Markings	Precision	Precision	Yes
Lighting/NAVAIDS			
Approach	Precision	Precision	Yes
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	HIRL or MIRL	HIRL	Yes
Weather Reporting	On-site ASOS or AWOS	ASOS	Yes
Airport Facilities			
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage: 30,000 sq ft; Terminal building square footage: 23,531 sq ft	No
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet: 29; Total tie-down spaces: 17	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet: 104; Number of based aircraft hangar spaces: 110 50% of transient aircraft fleet: 3; Number of transient aircraft hangar spaces: 10	Yes
Dedicated Maintenance/SRE Storage Building	Yes	No	No
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter 3-wire fencing	No
Services/Other			
Jet A Fuel	Full service	Full service	Yes
AvGas Fuel	Full service	Full service	Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities without fluid collection	No
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Yes	No	No
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Rangely
Airport Name: Rangely
FAA Identifier: 4V0
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,409 feet (6,500 feet)	No
Runway Width	60 feet	75 feet	Yes
Runway Strength	12,500 pounds	28,000 lbs SW; 28,000 lbs DW	Yes
Taxiway	Turn-arounds	Full parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3PT	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 12; Total tie-down spaces: 38	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 8; Number of based aircraft hangar spaces: 12	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	Yes	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Rifle
Airport Name: Rifle Garfield County
FAA Identifier: RIL
2020 CASP Classification: GA-Regional

Objective Category	GA-Regional Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	D-II				Yes
Runway Length	Align with Master Plan	7,000 feet (7,000 feet)				Yes
Runway Width	75 feet	100 feet				Yes
Runway Strength	30,000 pounds	90,000 lbs SW; 200,000 lbs DW; 250,000 lbs 2D				Yes
Taxiway	Full parallel	Full parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision with vertical guidance	Precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, pilot lounge, and Wi-Fi				Yes
Apron Tie-Downs	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	40% of based aircraft fleet plus 50% transient aircraft fleet:	35	Total tie-down spaces:	40	Yes
Hangars	Hangars for 60% of based aircraft fleet and 50% of weekly average overnight transient storage	60% of based aircraft fleet:	29	Number of based aircraft hangar spaces:	25	No
		50% of transient aircraft fleet:	15	Number of transient aircraft hangar spaces:	5	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	Dedicated de-icing area	Dedicated de-icing area				Yes
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	Yes				Yes
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Saguache
Airport Name: Saguache Municipal
FAA Identifier: 04V
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	A-I	No
Runway Length	Maintain existing	7,957 feet (7,957 feet)	Yes
Runway Width	60 feet	55 feet	No
Runway Strength	12,500 pounds	NA (Dirt)	N/A
Taxiway	Maintain existing	None	Yes
Runway Markings	Basic	N/A	N/A
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Wind cone	Yes
Runway Lighting	Reflectors	None	No
Weather Reporting	Non-certified weather	AWOS-3P	Yes
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	Based on community need
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 0 Total Tie-Down Spaces: 0	Yes
Hangars	Based on community need	0	Based on community need
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	Based on community need	Not available	Based on community need
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Based on community need	No	Based on community need
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Salida
Airport Name: Harriet Alexander Field
FAA Identifier: ANK
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-II	B-II	Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	7,351 feet (9,100 feet)	No
Runway Width	75 feet	75 feet	Yes
Runway Strength	30,000 pounds	30,000 lbs SW; 60,000 lbs DW	Yes
Taxiway	Partial parallel	Partial parallel	Yes
Runway Markings	Non-precision	Visual	No
Lighting/NAVAIDS			
Approach	Non-precision	Visual	No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs	No
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet: 23; Total tie-down spaces: 23	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet: 21; Number of based aircraft hangar spaces: 28 25% of transient aircraft fleet: 2; Number of transient aircraft hangar spaces: 1	No
Dedicated Maintenance/SRE Storage Building	Yes	Yes	Yes
Electric Vehicle Charging Stations	Yes	No	No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	24/7 (Self-Serve or Call Out)	24/7 (Self-Serve or Call Out)	Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Springfield
Airport Name: Springfield Municipal
FAA Identifier: 8V7
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-I	B-I				Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,000 feet (5,400 feet)				No
Runway Width	60 feet	60 feet				Yes
Runway Strength	12,500 pounds	12,500 lbs SW				Yes
Taxiway	Turn-arounds	Partial parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, VGSIs				No
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	Automated UNICOM				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restroom and pilot lounge				No
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet:	6	Total tie-down spaces:	8	Yes
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet:	4	Number of based aircraft hangar spaces:	18	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	Yes				Based on community need
Electric Vehicle Charging Stations	Based on community need	No				Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	Based on community need	Not available				Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				Based on community need
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				Based on community need
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Steamboat Springs
Airport Name: Steamboat Springs
FAA Identifier: SBS
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	4,452 feet (8,100 feet)				No
Runway Width	75 feet	100 feet				Yes
Runway Strength	30,000 pounds	50,000 lbs SW; 60,000 lbs DW				Yes
Taxiway	Partial parallel	Connector				No
Runway Markings	Non-precision	Visual				No
Lighting/NAVAIDS						
Approach	Non-precision	Visual				No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	HIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	50	Total tie-down spaces:	17	No
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	43	Number of based aircraft hangar spaces:	48	No
		25% of transient aircraft fleet:	7	Number of transient aircraft hangar spaces:	1	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	Yes				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Sterling
Airport Name: Sterling Municipal
FAA Identifier: STK
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-II				Yes
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,201 feet (5,600 feet)				No
Runway Width	75 feet	75 feet				Yes
Runway Strength	30,000 pounds	30,000 lbs SW				Yes
Taxiway	Partial parallel	Full parallel				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	MIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	18	Total tie-down spaces:	8	No
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	17	Number of based aircraft hangar spaces:	34	Yes
		25% of transient aircraft fleet:	1	Number of transient aircraft hangar spaces:	2	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	Full service				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Full service				Yes
Aircraft De-icing	Based on community need	None				Based on community need
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				Based on community need
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Telluride
Airport Name: Telluride Regional
FAA Identifier: TEX
2020 CASP Classification: Commercial

Objective Category	Commercial Service Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	C-III/C-II	C-III				Yes
Runway Length	Align with Master Plan	7,111 feet (7,111 feet)				Yes
Runway Width*	150 feet/100 feet	100 feet				No
Runway Strength	60,000 pounds	45,000 lbs SW; 89,000 lbs DW				Yes
Taxiway	Full parallel	Partial parallel				No
Runway Markings	Precision	Non-precision				No
Lighting/NAVAIDS						
Approach	Precision	Non-precision				No
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				No
Runway Lighting	HIRL or MIRL	HIRL				Yes
Weather Reporting	On-site ASOS or AWOS	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Minimum required terminal square footage:	15,000 sq ft	Terminal building square footage:	20, 000 sq ft	Yes
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	20% of based aircraft fleet plus 50% transient aircraft fleet:	122	Total tie-down spaces:	18	No
Hangars	Hangars for 80% of based aircraft fleet and 50% of weekly average overnight transient storage	80% of based aircraft fleet:	36	Number of based aircraft hangar spaces:	15	No
		50% of transient aircraft fleet:	113	Number of transient aircraft hangar spaces:	1	
Dedicated Maintenance/SRE Storage Building	Yes	No				No
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage				Yes
Services/Other						
Jet A Fuel	Full service	Full service				Yes
AvGas Fuel	Full service	Full service				Yes
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection				Yes
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Yes	No				No
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

*Note: Runway meets widths for facility and service objective but does not meet widths per FAA guidance in FAA AC 150/5300-13A Airport Design

Associated City: Trinidad
Airport Name: Perry Stokes
FAA Identifier: TAD
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-I	B-II				Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,500 feet (7,000 feet)				No
Runway Width	60 feet	75 feet				Yes
Runway Strength	12,500 pounds	37,000 lbs SW; 50,000 lbs DW				Yes
Taxiway	Turn-arounds	Turn-arounds				Yes
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs				Yes
Runway Lighting	MIRL	HIRL				Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	ASOS				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet:	14	Total tie-down spaces:	10	No
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet:	8	Number of based aircraft hangar spaces:	22	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No				**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No				**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	Based on community need	24/7 (Self-Serve or Call Out)				**Based on community need**
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	No				No
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Walden
Airport Name: Walden-Jackson County
FAA Identifier: 33V
2020 CASP Classification: GA-Rural

Objective Category	GA-Rural Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Maintain existing	5,900 feet (5,900 feet)	Yes
Runway Width	60 feet	75 feet	Yes
Runway Strength	12,500 pounds	25,000 lbs SW	Yes
Taxiway	Maintain existing	Connector	Yes
Runway Markings	Basic	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Maintain existing	Visual	Yes
Visual Aids	Wind cone	Rotating beacon, lighted wind cone, VGSIs	Yes
Runway Lighting	Reflectors	MIRL	Yes
Weather Reporting	Non-certified weather	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Based on community need	No	**Based on community need**
Apron Tie-Downs	Tie-downs for 100% of based aircraft fleet	100% of Based Aircraft Fleet: 3 Total Tie-Down Spaces: 3	Yes
Hangars	Based on community need	8	**Based on community need**
Dedicated Maintenance/SRE Storage Building	Based on community need	N/P	**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No	**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	Not available	**Based on community need**
AvGas Fuel	Based on community need	Not available	**Based on community need**
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Based on community need	Yes	**Based on community need**
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Walsenburg
Airport Name: Spanish Peaks Airfield
FAA Identifier: 4V1
2020 CASP Classification: GA-Local

Objective Category	GA-Local Objective	Current Condition				Meets 2020 Objective?
Airfield						
ARC	B-II	B-I				No
Runway Length	Accommodate 100% of small aircraft adjusted for elevation and mean maximum daily temp during hottest month	4,504 feet (7,300 feet)				No
Runway Width	75 feet	75 feet				Yes
Runway Strength	30,000 pounds	17,000 lbs SW; 17,000 lbs DW				No
Taxiway	Partial parallel	Connector				No
Runway Markings	Non-precision	Non-precision				Yes
Lighting/NAVAIDS						
Approach	Non-precision	Non-precision				Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	VGSIs, wind cone				No
Runway Lighting	MIRL	None				No
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3				Yes
Airport Facilities						
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area				Yes
Apron Tie-Downs	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	50% of based aircraft fleet plus 25% transient aircraft fleet:	10	Total tie-down spaces:	12	Yes
Hangars	Hangars for 50% of based aircraft fleet and 25% of weekly average overnight transient storage	50% of based aircraft fleet:	10	Number of based aircraft hangar spaces:	23	Yes
		25% of transient aircraft fleet:	0	Number of transient aircraft hangar spaces:	0	
Dedicated Maintenance/SRE Storage Building	Yes	Yes				Yes
Electric Vehicle Charging Stations	Yes	No				No
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage				Yes
Services/Other						
Jet A Fuel	24/7 (Self-Serve or Call Out)	24/7 (Self-Serve or Call Out)				Yes
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)				Yes
Aircraft De-icing	Based on community need	None				**Based on community need**
Courtesy Car	Yes	Yes				Yes
Sustainability Plan	Based on community need	No				**Based on community need**
Minimums for All Airports						
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)				Wi-Fi Service

Associated City: Westcliffe
Airport Name: Silver West
FAA Identifier: C08
2020 CASP Classification: GA-Community

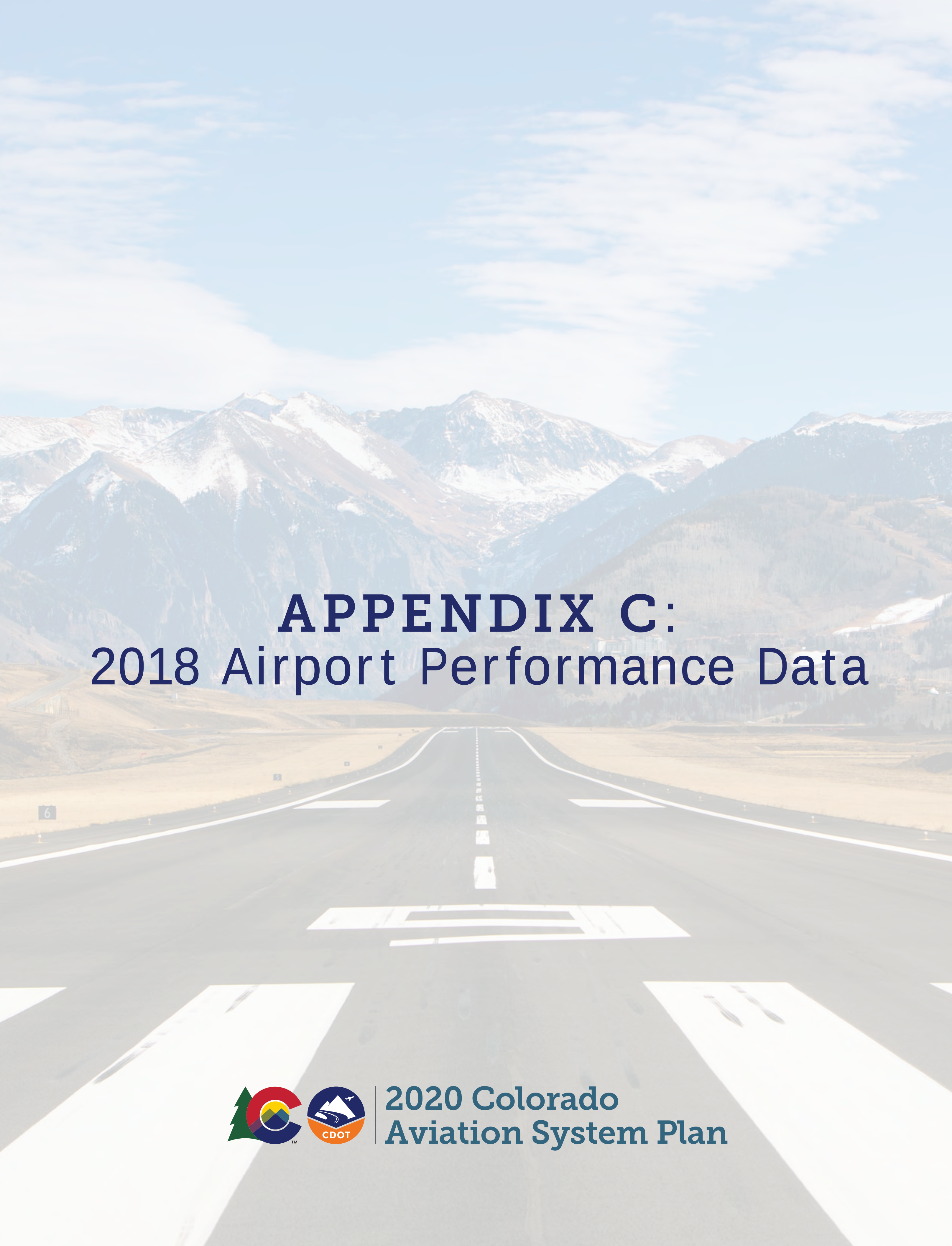
Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-I	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	6,954 feet (9,900 feet)	No
Runway Width	60 feet	55 feet	No
Runway Strength	12,500 pounds	N/P	N/A
Taxiway	Turn-arounds	Connector	Yes
Runway Markings	Non-precision	Visual	No
Lighting/NAVAIDS			
Approach	Non-precision	Visual	No
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Wind cone	No
Runway Lighting	MIRL	None	No
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	None	No
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 15; Total tie-down spaces: 10	No
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 10; Number of based aircraft hangar spaces: 12	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	Yes	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	No	No
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Wray
Airport Name: Wray Municipal
FAA Identifier: 2VS
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	5,399 feet (4,900 feet)	Yes
Runway Width	60 feet	75 feet	Yes
Runway Strength	12,500 pounds	16,000 lbs SW	Yes
Taxiway	Turn-arounds	Partial parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Yes
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 18; Total tie-down spaces: 6	No
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 11; Number of based aircraft hangar spaces: 37	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	Yes	**Based on community need**
Electric Vehicle Charging Stations	Based on community need	No	**Based on community need**
Perimeter Security	AOA 3-wire fencing with appropriate signage	AOA 3-wire fencing with appropriate signage	Yes
Services/Other			
Jet A Fuel	Based on community need	Not available	**Based on community need**
AvGas Fuel	24/7 (Self-Serve or Call-Out)	24/7 (Self-Serve or Call Out)	Yes
Aircraft De-icing	Based on community need	None	**Based on community need**
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	**Based on community need**
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service

Associated City: Yuma
Airport Name: Yuma Municipal
FAA Identifier: 2V6
2020 CASP Classification: GA-Community

Objective Category	GA-Community Objective	Current Condition	Meets 2020 Objective?
Airfield			
ARC	B-I	B-II	Yes
Runway Length	Accommodate 95% small aircraft adjusted for elevation and mean maximum daily temp during hottest month	4,200 feet (5,100 feet)	No
Runway Width	60 feet	75 feet	Yes
Runway Strength	12,500 pounds	12,500 lbs SW	Yes
Taxiway	Turn-arounds	Partial parallel	Yes
Runway Markings	Non-precision	Non-precision	Yes
Lighting/NAVAIDS			
Approach	Non-precision	Non-precision	Yes
Visual Aids	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Yes
Runway Lighting	MIRL	MIRL	Yes
Weather Reporting	On-site ASOS, AWOS, or Automated Unicom	AWOS-3	Yes
Airport Facilities			
Terminal (CS and/or GA)	Facility with restrooms, pilot-lounge, and Wi-Fi	Facility with restroom and pilot lounge	No
Apron Tie-Downs	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	60% of based aircraft fleet plus 25% transient aircraft fleet: 9; Total tie-down spaces: 2	No
Hangars	Hangars for 40% of based aircraft fleet	40% of based aircraft fleet: 6; Number of based aircraft hangar spaces: 16	Yes
Dedicated Maintenance/SRE Storage Building	Based on community need	No	Based on community need
Electric Vehicle Charging Stations	Based on community need	No	Based on community need
Perimeter Security	AOA 3-wire fencing with appropriate signage	Partial AOA 3-wire fencing	No
Services/Other			
Jet A Fuel	Based on community need	Not available	Based on community need
AvGas Fuel	24/7 (Self-Serve or Call-Out)	Not available	No
Aircraft De-icing	Based on community need	None	Based on community need
Courtesy Car	Yes	Yes	Yes
Sustainability Plan	Based on community need	No	Based on community need
Minimums for All Airports			
Restroom (24-hr accessible)	Cell Phone Service	Airport Layout Plan (ALP)	Wi-Fi Service



APPENDIX C:
2018 Airport Performance Data

2020 Colorado
Aviation System Plan

Appendix C. 2018 Airport Performance Data

C.1. Introduction

The goals, performance measures (PMs), and system indicators (SIs) presented in **Chapter 1. Study Design and Goals** establish the baseline from which the aviation system's performance is analyzed. **Chapter 6. Existing System Performance** includes an analysis of the current system in meeting the goals, PMs, and SIs at the statewide level and by airport classification. This appendix expands upon the summary results found in Chapter 6 and presents the individual airports' performance in meeting the PMs, SIs, and classification-specific minimums for each facility and service objective. Please note the tables included in this appendix use abbreviated titles for the PMs and SIs and the full titles are footnoted on each table. Airports in each table are categorized by airport role and presented in alphabetical order by associated city. A checkmark (✓) in the tables below indicates the airport meets the PM or SI. If an airport does not meet, most tables use a blank cell. Use of "N/A" typically stands for not available, while "NP" indicates the data was not provided by the airport. PMs and SIs are also numerically listed under each goal category. The numerical order corresponds to the PMs and SIs in each table. It should also be noted that some PMs and SIs are not included in associated tables because they are system-wide population coverage analyses or analyses that only involve a select few airports that don't yield individual airport results. As such, these PMs and SIs have been removed from the numerical list and included in the subsequent appendix narrative.

C.2. Safety and Efficiency

Aviation systems operate interdependently which requires airports to operate efficiently to reduce delays and congestion which is inherently safer. There are many components that contribute to a safe and efficient system, and many of those components are reflected in the PMs and SIs included in this goal category.

C.2.1. Safety and Efficiency PMs

1. Percent of Airports with Approaches Negatively Impacted by Obstructions
2. Percent of Airports that Have Full Perimeter Wildlife Fencing
3. Percent of Airports That Have Adopted Appropriate Land Use Controls (includes land use and height controls)
4. Percent of NPIAS Airports that Meet Current FAA Design Standards Under AC 150/5300-13A

Table C.1 presents the performance of each system airport in meeting the safety and efficiency PMs.

C.2.2. Safety and Efficiency SIs

1. Percent of Airports with Adequate Crosswind Coverage
2. Percent of Airports that Meet Runway Length Objectives for Existing Critical Aircraft
3. Percent of Airports that Have a Formalized Process for Receiving, Managing, and Responding to on-/near airport Unmanned Aircraft Systems (UAS) Use Requests
4. Percent of Communities with Emergency Responders that Have Basic Training in Aircraft Rescue and Aerial Firefighting (ARFF)
5. Percent of Airports that Support Aerial Firefighting
6. Percent of Airports that Support Medical/Emergency Evacuation Aircraft

Table C.2 presents the performance of each system airport in meeting the safety and efficiency SIs. It should be noted that the "Percent of Airports with the Level of Activities to Warrant an Air Traffic Control Tower (ATCT)" SI analysis was qualitative in nature and only applicable to a select number of airports in the system. As such, the evaluation is provided in Chapter 6, but individual airport performance in meeting the SI is not included in **Table C.2.**

Table C.1. Safety and Efficiency PMs

Associated City	Airport Name	FAA ID	Safety and Efficiency PMs					
			Approach Obstructions[1]	Wildlife Fencing[2]	Land Use Controls[3]		**FAA Design Standards[4]	
					Land Use Controls	Height Controls	Taxiway	RSA
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	✓	✓	NP	NP		✓
Aspen	Aspen-Pitkin County	ASE		✓	✓	✓		
Colorado Springs	Colorado Springs Municipal	COS		✓	✓	✓		✓
Cortez	Cortez Municipal	CEZ	✓	✓				✓
Denver	Denver International	DEN		✓	✓	✓		✓
Durango	Durango-La Plata County	DRO			✓	✓		✓
Eagle	Eagle County Regional	EGE	✓	✓	✓	✓		✓
Grand Junction	Grand Junction Regional	GJT			✓			✓
Gunnison	Gunnison-Crested Butte Regional	GUC		✓				
Hayden	Yampa Valley	HDN		✓	✓	✓		✓
Fort Collins/Loveland	Northern Colorado Regional	FNL		✓	✓	✓		
Montrose	Montrose Regional	MTJ		✓	✓	✓		✓
Pueblo	Pueblo Memorial	PUB						✓
Telluride	Telluride Regional	TEX		✓	✓	✓		
GA-National								
Denver	Centennial	APA	✓	✓	✓	✓		✓
Denver	Rocky Mountain Metropolitan	BJC		✓	✓	✓		✓
GA-Regional								
Colorado Springs	Meadow Lake	FLY	✓		✓	✓		✓
Denver	Colorado Air and Space Port	CFO			✓	✓		✓
Greeley	Greeley-Weld County	GXY		✓	✓	✓		✓
Longmont	Vance Brand	LMO	✓	***	✓	✓		✓
Rifle	Rifle Garfield County	RIL		✓	✓	✓	✓	
GA-Local								
Boulder	Boulder Municipal	BDU	✓	✓	✓	✓		
Buena Vista	Central Colorado Regional	AEJ		✓	✓	✓		✓
Burlington	Kit Carson County	ITR						✓
Canon City	Fremont County	1V6			✓	✓		✓
Craig	Craig-Moffat	CAG	✓	✓				
Del Norte	Astronaut Kent Rominger	RCV			✓	✓	N/A	N/A
Delta	Blake Field	AJZ						✓
Erie	Erie Municipal	EIK			✓	✓		
Fort Morgan	Fort Morgan Municipal	FMM	✓		✓	✓	✓	
Glenwood Springs	Glenwood Springs Municipal	GWS	✓				N/A	N/A

Associated City	Airport Name	FAA ID	Safety and Efficiency PMs					
			Approach Obstructions[1]	Wildlife Fencing[2]	Land Use Controls[3]		**FAA Design Standards[4]	
					Land Use Controls	Height Controls	Taxiway	RSA
Kremmling	Mc Elroy Airfield	20V		✓	✓	✓		✓
La Junta	La Junta Municipal	LHX		✓	✓	✓		✓
Lamar	Lamar Municipal	LAA		✓	✓	✓		✓
Limon	Limon Municipal	LIC			✓	✓		✓
Pagosa Springs	Stevens Field	PSO		✓	✓	✓		
Salida	Harriet Alexander Field	ANK		✓	✓			✓
Steamboat Springs	Steamboat Springs	SBS		✓	NP	NP		✓
Sterling	Sterling Municipal	STK		✓	✓	✓		✓
Walsenburg	Spanish Peaks Airfield	4V1		✓	✓	✓		✓
GA-Community								
Akron	Colorado Plains Regional	AKO			✓	✓		✓
Creede	Mineral County Memorial	C24			✓	✓	N/A	N/A
Granby	Granby-Grand County	GNB	✓	✓	✓	✓		✓
Holyoke	Holyoke	HEQ	✓		✓	✓	✓	✓
Las Animas	Las Animas-Bent County	7V9					N/A	N/A
Leadville	Lake County	LXV		✓	✓	✓		✓
Meeker	Meeker/Coulter Field	EEO		✓			✓	✓
Monte Vista	Monte Vista Municipal	MVI					✓	✓
Nucla	Hopkins Field	AIB						
Paonia	North Fork Valley	7V2		✓	NP	NP	N/A	N/A
Rangely	Rangely	4V0		✓		✓		✓
Springfield	Springfield Municipal	8V7					N/A	N/A
Trinidad	Perry Stokes	TAD		✓	✓	✓		✓
Westcliffe	Silver West	C08	✓		✓	✓	N/A	N/A
Wray	Wray Municipal	2V5						✓
Yuma	Yuma Municipal	2V6			✓	NP		✓
GA-Rural								
Blanca	Blanca	05V	✓	NP	NP	NP	N/A	N/A
Brush	Brush Municipal	7V5	✓		NP	NP	N/A	N/A
Center	Leach	1V8	✓				N/A	N/A
Eads	Eads Municipal	9V7	✓	NP			N/A	N/A
Haxtun	Haxtun Municipal	17V	✓		✓		N/A	N/A
Holly	Holly	K08	✓				N/A	N/A
Julesburg	Julesburg Municipal	7V8	✓				N/A	N/A
La Veta	Cuchara Valley	07V	✓		NP	NP	N/A	N/A
Saguache	Saguache Municipal	04V	✓				N/A	N/A

Associated City	Airport Name	FAA ID	Safety and Efficiency PMs					
			Approach Obstructions[1]	Wildlife Fencing[2]	Land Use Controls[3]		**FAA Design Standards[4]	
					Land Use Controls	Height Controls	Taxiway	RSA
Walden	Walden-Jackson County	33V			✓	✓	N/A	N/A
System-wide Total			**23**	**32**	**41**	**38**	**5**	**38**

**Note: An airport is designated with a checkmark if the airport's local zoning authority has adopted land use or height controls.*

***Note: This PM only analyzes the performance of NPIAS airports in meeting the FAA Design Standards outlined in AC 150/5300-13A, Change 1. Non-NPIAS airports are denoted as N/A.*

****Note: LMO reported 95 percent perimeter fencing, with 75 percent of this report4ed as security/wildlife fencing.*

Sources: FAA Form 5010; 2018 Inventory & Data Form; ALPs; Google Earth; Kimley-Horn, 2019

[1] Airports with approaches negatively impacted by obstructions
[2] Airports that have full perimeter wildlife fencing
[3] Airports that have adopted appropriate land use controls
[4] NPIAS airports that meet current FAA design standards under AC 150/5300-13A

Table C.2. Safety and Efficiency SIs

Associated City	Airport Name	FAA ID	Safety and Efficiency SIs					
			Crosswind Coverage[5]	*Runway Length[6]	UAS Process[7]	***ARFF[8]	Aerial Firefighting[9]	Emergency Aircraft[10]
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	✓	8,519 feet (9,000 feet)	✓	✓	✓	✓
Aspen	Aspen-Pitkin County	ASE	✓	8,006 feet (9,310 feet)	✓	N/A	✓	✓
Colorado Springs	Colorado Springs Municipal	COS	✓	13,501 feet (13,500 feet)	✓	N/A	✓	
Cortez	Cortez Municipal	CEZ	✓	7,205 feet (7,205 feet)		✓	✓	✓
Denver	Denver International	DEN	✓	12,000 feet** (unknown))	✓	N/A		
Durango	Durango-La Plata County	DRO	✓	9,201 feet (9,900 feet)	✓	N/A	✓	✓
Eagle	Eagle County Regional	EGE	✓	9,000 feet (10,000 feet)		N/A	✓	✓
Grand Junction	Grand Junction Regional	GJT	✓	10,501 feet (10,501 feet)		N/A	✓	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	9,400 feet (9,400 feet)		N/A	✓	✓
Hayden	Yampa Valley	HDN	✓	10,000 feet (10,000 feet)	✓	N/A	✓	✓
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓	8,500 feet (9,500 - 10,000 feet)	✓	N/A	✓	✓
Montrose	Montrose Regional	MTJ	✓	10,000 feet (10,000 feet)		N/A	✓	✓
Pueblo	Pueblo Memorial	PUB	✓	10,496 feet (10,496 feet)		N/A	✓	✓
Telluride	Telluride Regional	TEX	✓	7,111 feet (7,111 feet)	✓	N/A		✓
GA-National								
Denver	Centennial	APA	✓	10,001 feet (10,001 feet)	✓	✓	✓	✓
Denver	Rocky Mountain Metropolitan	BJC	✓	9,000 feet (14,000 feet)	✓	N/A	✓	✓
GA-Regional								
Colorado Springs	Meadow Lake	FLY		6,000 feet (6,000 feet)		NP		

Associated City	Airport Name	FAA ID	Safety and Efficiency SIs					
			Crosswind Coverage[5]	*Runway Length[6]	UAS Process[7]	***ARFF[8]	Aerial Firefighting[9]	Emergency Aircraft[10]
Denver	Colorado Air and Space Port	CFO	✓	8,000 feet (8,000 feet)	✓	✓		✓
Greeley	Greeley-Weld County	GXY	✓	10,000 feet (10,000 feet)		✓		✓
Longmont	Vance Brand	LMO	✓	4,799 feet (6,390 feet)	✓		✓	
Rifle	Rifle Garfield County	RIL	✓	7,000 feet (7,000 feet)	✓	✓	✓	✓
GA-Local								
Boulder	Boulder Municipal	BDU	✓	4,100 feet (6,500 feet)	✓	✓	✓	✓
Buena Vista	Central Colorado Regional	AEJ		8,303 feet (9,400 feet)	✓		✓	✓
Burlington	Kit Carson County	ITR		5,199 feet (5,600 feet)		✓	✓	✓
Canon City	Fremont County	1V6		5,399 feet (6,700 feet)		NP	✓	✓
Craig	Craig-Moffat	CAG	✓	5,606 feet (6,500 feet)		NP	✓	✓
Del Norte	Astronaut Kent Rominger	RCV	✓	6,051 feet (9,200 feet)	✓	NP	✓	✓
Delta	Blake Field	AJZ	✓	5,598 feet (6,500 feet)			✓	✓
Erie	Erie Municipal	EIK	✓	4,700 feet (6,500 feet)	✓	✓		
Fort Morgan	Fort Morgan Municipal	FMM	✓	5,731 feet (5,900 feet)		NP	✓	✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓	3,305 feet (7,200 feet)			✓	✓
Kremmling	Mc Elroy Airfield	20V	✓	5,540 feet (9,100 feet)		✓	✓	✓
La Junta	La Junta Municipal	LHX		6,849 feet (5,400 feet)			✓	
Lamar	Lamar Municipal	LAA		6,304 feet (5,200 feet)		NP	✓	✓
Limon	Limon Municipal	LIC		4,700 feet (6,100 feet)		✓		✓
Pagosa Springs	Stevens Field	PSO	✓	8,100 feet (9,000 feet)	✓	✓	✓	✓

Associated City	Airport Name	FAA ID	Safety and Efficiency SIs					
			Crosswind Coverage[5]	*Runway Length[6]	UAS Process[7]	***ARFF[8]	Aerial Firefighting[9]	Emergency Aircraft[10]
Salida	Harriet Alexander Field	ANK	✓	7,351 feet (9,100 feet)			✓	✓
Steamboat Springs	Steamboat Springs	SBS	✓	4,452 feet (8,100 feet)	✓		✓	✓
Sterling	Sterling Municipal	STK	✓	5,201 feet (5,600 feet)		✓		✓
Walsenburg	Spanish Peaks Airfield	4V1		4,504 feet (7,300 feet)		NP	✓	✓
GA-Community								
Akron	Colorado Plains Regional	AKO		7,001 feet (5,900 feet)		✓		✓
Creede	Mineral County Memorial	C24	✓	6,880 feet (>10,000 feet)		NP	✓	✓
Granby	Granby-Grand County	GNB	✓	5,001 feet (>10,000 feet)		NP	✓	✓
Holyoke	Holyoke	HEQ	✓	5,000 feet (5,000 feet)		NP		✓
Las Animas	Las Animas-Bent County	7V9		3,870 feet (5,200 feet)				
Leadville	Lake County	LXV	✓	6,400 feet (>10,000 feet)		✓	✓	✓
Meeker	Meeker/Coulter Field	EEO	✓	6,503 feet (7,700 feet)			✓	✓
Monte Vista	Monte Vista Municipal	MVI		5,901 feet (9,100 feet)		NP	✓	NP
Nucla	Hopkins Field	AIB	✓	5,210 feet (7,450 feet)		NP	✓	✓
Paonia	North Fork Valley	7V2	✓	4,500 feet (7,150 feet)		NP	✓	NP
Rangely	Rangely	4V0	✓	6,409 feet (6,500 feet)			✓	✓
Springfield	Springfield Municipal	8V7		5,000 feet (5,400 feet)				✓
Trinidad	Perry Stokes	TAD		5,500 feet (7,000 feet)		NP		✓
Westcliffe	Silver West	C08	✓	6,954 feet (9,900 feet)	NP	NP		✓
Wray	Wray Municipal	2V5	✓	5,399 feet (4,900 feet)				✓

Associated City	Airport Name	FAA ID	Safety and Efficiency SIs					
			Crosswind Coverage[5]	*Runway Length[6]	UAS Process[7]	***ARFF[8]	Aerial Firefighting[9]	Emergency Aircraft[10]
Yuma	Yuma Municipal	2V6		4,200 feet (5,100 feet)		NP		✓
GA-Rural								
Blanca	Blanca	05V		6,160 feet (6,100 feet)	NP	NP	NP	NP
Brush	Brush Municipal	7V5		4,300 feet (4,300 feet)		NP		
Center	Leach	1V8	✓	7,000 feet (7,000 feet)			NP	
Eads	Eads Municipal	9V7		3,860 feet (3,860 feet)				
Haxtun	Haxtun Municipal	17V		3,860 feet (3,860 feet)		NP		✓
Holly	Holly	K08		4,140 feet (4,140 feet)		NP		
Julesburg	Julesburg Municipal	7V8		4,100 feet (4,100 feet)		NP		✓
La Veta	Cuchara Valley	07V		5,798 feet (5,798 feet)		NP	✓	
Saguache	Saguache Municipal	04V		7,957 feet (7,957 feet)				
Walden	Walden-Jackson County	33V	✓	5,900 feet (5,900 feet)		✓	✓	✓
		System-wide Total	**44**	**29**	**19**	**16**	**42**	**50**

Any existing conditions that do not meet the objective are shown in red text.

**Note: Existing runway lengths and objectives for each airport are presented in the table. Objectives are denoted with parenthesis, while the existing performance is presented without.*

***Note: While DEN's primary runway is Runway 17L/35R, its longest runway (and longest runway in the U.S.) is Runway 16R/34L which is 16,000 feet long.*

****Note: Part 139 Certified airports are already required to have ARFF equipment and trained personnel. These airports are denoted with an "N/A" in the ARFF column and are not included in the analysis.*

Sources: 2018 Inventory & Data Form; FAA AC 150/5300-13A, Change 1; FAA Wind Analysis Tool; FAA AC 150/5325-4B, Runway Length Requirements; Individual Airport Master Plans; ALPs; Kimley-Horn, 2019

[5] Airports with Adequate Crosswind Coverage
[6] Airports that Meet Runway Length Objectives for Existing Critical Aircraft
[7] Airports that Have a Formalized Process for Receiving, Managing, and Responding to on-/near-airport Unmanned Aircraft Systems (UAS) Use Requests
[8] Communities with Emergency Responders that Have Basic Training in Aircraft Rescue and Firefighting (ARFF)
[9] Airports that Support Aerial Firefighting
[10] *Airports that Support Medical/Emergency Evacuation Aircraft*

C.3. Access and Mobility

The access and mobility goal allow Colorado's airport users the ability to adequately access the vast range of facilities and services that airports provide. This goal measures the system's accessibility and mobility by studying its infrastructure, services, and potential reach to the surrounding areas.

C.3.1. Access and Mobility PMs

1. Percent of Airports with a Dedicated Snow Removal Equipment (SRE) Building
2. Percent of Airports with Adequate Terminal Capacity (commercial service capacity, GA building size)
3. Percent of Airports with Adequate Transient Hangar Spaces

Table C.3 presents the performance of each system airport in meeting the access and mobility PMs. Existing conditions for each airport are shown above the objective which is enclosed in parentheses. Any existing conditions that do not meet the objective are shown in red text. Terminal buildings we're evaluated separately for Commercial Service and GA. For details related to determining adequacy of terminal capacity/size and transient hangar space, refer to Chapter 6. Existing System Performance. It should be noted that the "Percent of Population within a 30-Minute Drive Time of an All-Weather Runway" PM was a system-wide analysis that cannot be analyzed on an airport-by-airport basis. As such, the evaluation is provided in Chapter 6 (83 percent of Colorado's population and 16 percent of the state's land is within a 30-minute drive of an airport that has an all-weather runway), but individual airport performance in meeting the PM is not included in **Table C.3**.

C.3.2. Access and Mobility SI

1. Percent of Airports that Provide Ground Transportation (Courtesy Car or Other)

Table C.4 presents the performance of each system airport in meeting the access and mobility SI. The "Percent of Population Within a 30-Minute Drive Time of a System Airport" and "Percent of Airports Providing Access to Remote and Rural Communities" SIs were both system-wide analyses. As such, the evaluations are provided in Chapter 6, but individual airport performance in meeting the SIs is not included in **Table C.4**. It should be noted that available modes of ground transportation at individual CASP airports is detailed in Chapter 2. Inventory of System Condition and Chapter 3. Supplemental System Context.

Table C.3. Access and Mobility PMs

Associated City	Airport Name	FAA ID	Access and Mobility PMs			
			SRE Building[11]	*Terminal Capacity[12]		*Transient Hangars[13]
				Commercial Service Terminal	GA Terminal	
Commercial Service						
Alamosa	San Luis Valley Regional	ALS		8,400 square feet (15,000 square feet)	1,500 square feet (496 square feet)	2 spaces (1 space)
Aspen	Aspen-Pitkin County	ASE	✓	45,000 square feet (144,000 square feet)	6,000 square feet (2,585 square feet)	5 spaces (35 spaces)
Colorado Springs	Colorado Springs Municipal	COS	✓	294,495 square feet (216,000 square feet)	11,000 square feet (8,526 square feet)	15 spaces (75 spaces)
Cortez	Cortez Municipal	CEZ	✓	3,500 square feet (15,000 square feet)	4,200 square feet (1,063 square feet)	3 spaces (0 spaces)
Denver	Denver International	DEN	✓	7,496,972 square feet (3,136,000 square feet)	10,000 square feet (519 square feet)	3 spaces (28 spaces)
Durango	Durango-La Plata County	DRO	✓	37,617 square feet (54,000 square feet)	8,000 square feet (2,593 square feet)	0 spaces (10 spaces)
Eagle	Eagle County Regional	EGE	✓	120,000 square feet (108,000 square feet)	27,000 square feet (2,950 square feet)	25 spaces (24 spaces)
Grand Junction	Grand Junction Regional	GJT		76,000square feet (108,000 square feet)	17,000 square feet (3,730 square feet)	120 spaces (33 spaces)
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	34,800 square feet (54,000 square feet)	1,700 square feet (709 square feet)	0 spaces (20 spaces)
Hayden	Yampa Valley	HDN	✓	71,695 square feet (108,000 square feet)	5,800 square feet (693 square feet)	4 spaces (3 spaces)
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓	4,020 square feet (15,000 square feet)	2,500 square feet (11,533 square feet)	2 spaces (3 spaces)
Montrose	Montrose Regional	MTJ		35,000 square feet (72,000 square feet)	4,700 square feet (3,085 square feet)	25 spaces (10 spaces)
Pueblo	Pueblo Memorial	PUB		23,531 square feet (30,000 square feet)	8,000 square feet (2,869 square feet)	10 spaces (3 spaces)
Telluride	Telluride Regional	TEX		20,000 square feet (15,000 square feet)	1,500 square feet (1,171 square feet)	1 space (113 spaces)
GA-National						
Denver	Centennial	APA	✓	N/A	60,100 square feet (40,721 square feet)	33 spaces (88 spaces)

Associated City	Airport Name	FAA ID	Access and Mobility PMs			
			SRE Building[11]	*Terminal Capacity[12]		*Transient Hangars[13]
				Commercial Service Terminal	GA Terminal	
Denver	Rocky Mountain Metropolitan	BJC		N/A	25,000 square feet (20,926 square feet)	0 spaces (350 spaces)
GA-Regional						
Colorado Springs	Meadow Lake	FLY		N/A	Does not have terminal building	0 spaces (3 spaces)
Denver	Colorado Air and Space Port	CFO	✓	N/A	9,500 square feet (9,636 square feet)	2 spaces (10 spaces)
Greeley	Greeley-Weld County	GXY	✓	N/A	6,000 square feet (15,403 square feet)	8 spaces (7 spaces)
Longmont	Vance Brand	LMO		N/A	2,000 square feet (9,065 square feet)	2 spaces (6 spaces)
Rifle	Rifle Garfield County	RIL	✓	N/A	17,760 square feet (1,816 square feet)	5 spaces (15 spaces)
GA-Local						
Boulder	Boulder Municipal	BDU		N/A	8,800 square feet (6,420 square feet)	0 spaces (2 spaces)
Buena Vista	Central Colorado Regional	AEJ	✓	N/A	15,050 square feet (1,233 square feet)	4 spaces (1 space)
Burlington	Kit Carson County	ITR	✓	N/A	8,000 square feet (989 square feet)	2 spaces (0 spaces)
Canon City	Fremont County	1V6	✓	N/A	2,500 square feet (1,525 square feet)	0 spaces (1 space)
Craig	Craig-Moffat	CAG		N/A	1,600 square feet (1,500 square feet)	0 spaces (2 spaces)
Del Norte	Astronaut Kent Rominger	RCV		N/A	Does not have a terminal building	0 spaces (1 space)
Delta	Blake Field	AJZ		N/A	3,650 square feet (364 square feet)	6 spaces (2 spaces)
Erie	Erie Municipal	EIK		N/A	10,000 square feet (6,500 square feet)	2 spaces (3 spaces)
Fort Morgan	Fort Morgan Municipal	FMM		N/A	4,600 square feet (1,225 square feet)	0 spaces (1 space)

Associated City	Airport Name	FAA ID	Access and Mobility PMs			
			SRE Building[11]	*Terminal Capacity[12]		*Transient Hangars[13]
				Commercial Service Terminal	GA Terminal	
Glenwood Springs	Glenwood Springs Municipal	GWS		N/A	Does not have a terminal building	0 spaces (1 space)
Kremmling	Mc Elroy Airfield	20V	✓	N/A	4,500 square feet (150 square feet)	1 space (2 spaces)
La Junta	La Junta Municipal	LHX		N/A	4,000 square feet (1,119 square feet)	2 spaces (1 space)
Lamar	Lamar Municipal	LAA	✓	N/A	4,200 square feet (399 square feet)	2 spaces (1 space)
Limon	Limon Municipal	LIC	✓	N/A	500 square feet (741 square feet)	0 spaces (0 spaces)
Pagosa Springs	Stevens Field	PSO	✓	N/A	1,500 square feet (2,038 square feet)	0 space (2 spaces)
Salida	Harriet Alexander Field	ANK	✓	N/A	1,600 square feet (496 square feet)	1 space (2 spaces)
Steamboat Springs	Steamboat Springs	SBS	✓	N/A	11,500 square feet (1,388 square feet)	1 space (7 spaces)
Sterling	Sterling Municipal	STK		N/A	2,150 square feet (150 square feet)	2 spaces (1 space)
Walsenburg	Spanish Peaks Airfield	4V1	✓	N/A	1,385 square feet (625 square feet)	0 spaces (0 spaces)
GA-Community						
Akron	Colorado Plains Regional	AKO	None (Based on community need)	N/A	1,500 square feet (2,438 square feet)	1 space (Based on community need)
Creede	Mineral County Memorial	C24	None (Based on community need)	N/A	50 square feet (150 square feet)	0 spaces (Based on community need)
Granby	Granby-Grand County	GNB	Has SRE building (Based on community need)	N/A	2,900 square feet (325 square feet)	0 spaces (Based on community need)
Holyoke	Holyoke	HEQ	None (Based on community need)	N/A	450 square feet (1,063 square feet)	0 spaces (Based on community need)
Las Animas	Las Animas-Bent County	7V9	NP (Based on community need)	N/A	Does not have a terminal building	1 space (Based on community need)
Leadville	Lake County	LXV	Has SRE building (Based on community need)	N/A	3,200 square feet (375 square feet)	6 spaces (Based on community need)

Associated City	Airport Name	FAA ID	Access and Mobility PMs			
			SRE Building[11]	*Terminal Capacity[12]		*Transient Hangars[13]
				Commercial Service Terminal	GA Terminal	
Meeker	Meeker/Coulter Field	EEO	None (Based on community need)	N/A	1,030 square feet (1,006 square feet)	10 spaces (Based on community need)
Monte Vista	Monte Vista Municipal	MVI	None (Based on community need)	N/A	16,760 square feet (750 square feet)	0 spaces (Based on community need)
Nucla	Hopkins Field	AIB	None (Based on community need)	N/A	2,900 square feet (516 square feet)	0 spaces (Based on community need)
Paonia	North Fork Valley	7V2	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
Rangely	Rangely	4V0	Has SRE building (Based on community need)	N/A	2,250 square feet (5,888 square feet)	0 spaces (Based on community need)
Springfield	Springfield Municipal	8V7	Has SRE building (Based on community need)	N/A	2,100 square feet (573 square feet)	0 spaces (Based on community need)
Trinidad	Perry Stokes	TAD	None (Based on community need)	N/A	3,500 square feet (660 square feet)	0 spaces (Based on community need)
Westcliffe	Silver West	C08	Has SRE building (Based on community need)	N/A	2,500 square feet (150 square feet)	0 spaces (Based on community need)
Wray	Wray Municipal	2V5	Has SRE building (Based on community need)	N/A	500 square feet (1,825 square feet)	0 spaces (Based on community need)
Yuma	Yuma Municipal	2V6	None (Based on community need)	N/A	190 square feet (625 square feet)	0 spaces (Based on community need)
GA-Rural						
Blanca	Blanca	05V	NP (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
Brush	Brush Municipal	7V5	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
Center	Leach	1V8	None (Based on community need)	N/A	2,380 square feet (150 square feet)	0 spaces (Based on community need)
Eads	Eads Municipal	9V7	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
Haxtun	Haxtun Municipal	17V	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
Holly	Holly	K08	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)

Associated City	Airport Name	FAA ID	Access and Mobility PMs			
			SRE Building[11]	*Terminal Capacity[12]		*Transient Hangars[13]
				Commercial Service Terminal	GA Terminal	
Julesburg	Julesburg Municipal	7V8	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
La Veta	Cuchara Valley	07V	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
Saguache	Saguache Municipal	04V	None (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
Walden	Walden-Jackson County	33V	NP (Based on community need)	N/A	Does not have a terminal building	0 spaces (Based on community need)
System-wide Total			**23**	**4**	**38**	**16**

Sources: FAA 5010 Master Record; 2018 Inventory & Data Forms; Individual Airport Master Plans; ALPs; ACRP Report 25; ACRP Report 113; ESRI ArcGIS Online; 2013-2017 U.S. Census – American Community Survey; Kimley-Horn, 2019

[11] Airports with a Dedicated Snow Removal Equipment (SRE) Building
[12] Airports with Adequate Terminal Capacity
[13] Airports with Adequate Transient Hangar Spaces

Table C.4. Access and Mobility SI

Associated City	Airport Name	FAA ID	Access and Mobility SI
			Ground Transportation[14]
Commercial Service			
Alamosa	San Luis Valley Regional	ALS	✓
Aspen	Aspen-Pitkin County	ASE	✓
Colorado Springs	Colorado Springs Municipal	COS	✓
Cortez	Cortez Municipal	CEZ	✓
Denver	Denver International	DEN	✓
Durango	Durango-La Plata County	DRO	✓
Eagle	Eagle County Regional	EGE	✓
Grand Junction	Grand Junction Regional	GJT	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓
Hayden	Yampa Valley	HDN	✓
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓
Montrose	Montrose Regional	MTJ	✓
Pueblo	Pueblo Memorial	PUB	✓
Telluride	Telluride Regional	TEX	✓
GA-National			
Denver	Centennial	APA	✓
Denver	Rocky Mountain Metropolitan	BJC	✓
GA-Regional			
Colorado Springs	Meadow Lake	FLY	✓
Denver	Colorado Air and Space Port	CFO	✓
Greeley	Greeley-Weld County	GXY	✓

Associated City	Airport Name	FAA ID	Access and Mobility SI Ground Transportation[14]
Longmont	Vance Brand	LMO	✓
Rifle	Rifle Garfield County	RIL	✓
GA-Local			
Boulder	Boulder Municipal	BDU	✓
Buena Vista	Central Colorado Regional	AEJ	✓
Burlington	Kit Carson County	ITR	✓
Canon City	Fremont County	1V6	✓
Craig	Craig-Moffat	CAG	✓
Del Norte	Astronaut Kent Rominger	RCV	✓
Delta	Blake Field	AJZ	✓
Erie	Erie Municipal	EIK	✓
Fort Morgan	Fort Morgan Municipal	FMM	✓
Glenwood Springs	Glenwood Springs Municipal	GWS	✓
Kremmling	Mc Elroy Airfield	20V	✓
La Junta	La Junta Municipal	LHX	✓
Lamar	Lamar Municipal	LAA	✓
Limon	Limon Municipal	LIC	✓
Pagosa Springs	Stevens Field	PSO	✓
Salida	Harriet Alexander Field	ANK	✓
Steamboat Springs	Steamboat Springs	SBS	✓
Sterling	Sterling Municipal	STK	✓
Walsenburg	Spanish Peaks Airfield	4V1	✓
GA-Community			
Akron	Colorado Plains Regional	AKO	✓

Associated City	Airport Name	FAA ID	Access and Mobility SI Ground Transportation[14]
Creede	Mineral County Memorial	C24	✓
Granby	Granby-Grand County	GNB	✓
Holyoke	Holyoke	HEQ	✓
Las Animas	Las Animas-Bent County	7V9	✓
Leadville	Lake County	LXV	✓
Meeker	Meeker/Coulter Field	EEO	✓
Monte Vista	Monte Vista Municipal	MVI	
Nucla	Hopkins Field	AIB	✓
Paonia	North Fork Valley	7V2	✓
Rangely	Rangely	4V0	✓
Springfield	Springfield Municipal	8V7	✓
Trinidad	Perry Stokes	TAD	✓
Westcliffe	Silver West	C08	
Wray	Wray Municipal	2V5	✓
Yuma	Yuma Municipal	2V6	✓
GA-Rural			
Blanca	Blanca	05V	
Brush	Brush Municipal	7V5	✓
Center	Leach	1V8	
Eads	Eads Municipal	9V7	✓
Haxtun	Haxtun Municipal	17V	✓
Holly	Holly	K08	
Julesburg	Julesburg Municipal	7V8	✓
La Veta	Cuchara Valley	07V	✓

Associated City	Airport Name	FAA ID	Access and Mobility SI
			Ground Transportation[14]
Saguache	Saguache Municipal	04V	
Walden	Walden-Jackson County	33V	✓
		System-wide Total	**60**

Sources: 2018 Inventory & Data Form; FAA Airport/Facility Directory (AFD); ESRI ArcGIS Online; 2013-2017 U.S. Census – American Community Survey; Kimley-Horn, 2019

[14] Airports that Provide Ground Transportation (Courtesy Car or Other)

C.4. Economic Sustainability

Airports often serve as the catalyst for economic activity such that they directly link people, businesses, goods, and services. To support Colorado airports in sustaining their importance as economic anchors, it is important to leverage and diversify their facilities and services to meet current and anticipated needs of their users.

C.4.1. Economic Sustainability PMs

1. Percent of Airports with Necessary Fuel Type, Available 24/7
2. Percent of Airports that Support the Aerospace Manufacturing. Technology, and/or Testing Industry
3. Percent of Airports with Adequate Utilities

Table C.5 presents the performance of each system airport in meeting the economic sustainability PMs.

C.4.2. Economic Sustainability SIs

1. Percent of Airports with Active Development Partnerships with Chambers of Commerce, Tourism Bureaus, Organizations, Industries, Governments, and Recreational User Groups
2. Percent of Airports with Business Parks or Landside Real Estate Development
3. Percent of Airport Recognized in Local and/or Regional Comprehensive Plans
4. Percent of Airports that Support Aerial Agricultural Application

Table C.6 presents the performance of each system airport in meeting the economic sustainability SIs.

Table C.5. Economic Sustainability PMs

Associated City	Airport Name	FAA ID	Economic Sustainability PMs		
			24/7 Fuel[15]	Aerospace Industry[16]	Utilities[17]
Commercial Service					
Alamosa	San Luis Valley Regional	ALS	✓	✓	✓
Aspen	Aspen-Pitkin County	ASE	✓		
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓
Cortez	Cortez Municipal	CEZ	✓		✓
Denver	Denver International	DEN	✓		✓
Durango	Durango-La Plata County	DRO	✓	✓	✓
Eagle	Eagle County Regional	EGE	✓	✓	
Grand Junction	Grand Junction Regional	GJT	✓	✓	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	✓	
Hayden	Yampa Valley	HDN	✓	✓	✓
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓	✓	✓
Montrose	Montrose Regional	MTJ	✓	✓	
Pueblo	Pueblo Memorial	PUB	✓	✓	✓
Telluride	Telluride Regional	TEX	✓	✓	
GA-National					
Denver	Centennial	APA	✓	✓	✓
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	✓
GA-Regional					
Colorado Springs	Meadow Lake	FLY		✓	✓
Denver	Colorado Air and Space Port	CFO	✓	✓	✓
Greeley	Greeley-Weld County	GXY	✓	✓	✓
Longmont	Vance Brand	LMO	✓	✓	✓
Rifle	Rifle Garfield County	RIL	✓		✓

Associated City	Airport Name	FAA ID	Economic Sustainability PMs		
			24/7 Fuel[15]	Aerospace Industry[16]	Utilities[17]
GA-Local					
Boulder	Boulder Municipal	BDU	✓		
Buena Vista	Central Colorado Regional	AEJ	✓	✓	
Burlington	Kit Carson County	ITR	✓		✓
Canon City	Fremont County	1V6	✓		✓
Craig	Craig-Moffat	CAG	✓		
Del Norte	Astronaut Kent Rominger	RCV			✓
Delta	Blake Field	AJZ	✓	✓	✓
Erie	Erie Municipal	EIK	✓		✓
Fort Morgan	Fort Morgan Municipal	FMM	✓		
Glenwood Springs	Glenwood Springs Municipal	GWS	✓		✓
Kremmling	Mc Elroy Airfield	20V	✓	✓	
La Junta	La Junta Municipal	LHX	✓		✓
Lamar	Lamar Municipal	LAA	✓		✓
Limon	Limon Municipal	LIC			
Pagosa Springs	Stevens Field	PSO	✓		
Salida	Harriet Alexander Field	ANK	✓		
Steamboat Springs	Steamboat Springs	SBS	✓	✓	
Sterling	Sterling Municipal	STK	✓		✓
Walsenburg	Spanish Peaks Airfield	4V1	✓		✓
GA-Community					
Akron	Colorado Plains Regional	AKO	✓	✓	✓
Creede	Mineral County Memorial	C24	✓		✓
Granby	Granby-Grand County	GNB	✓	NP	✓
Holyoke	Holyoke	HEQ	✓		
Las Animas	Las Animas-Bent County	7V9			

Associated City	Airport Name	FAA ID	Economic Sustainability PMs		
			24/7 Fuel[15]	Aerospace Industry[16]	Utilities[17]
Leadville	Lake County	LXV	✓	✓	✓
Meeker	Meeker/Coulter Field	EEO	✓		
Monte Vista	Monte Vista Municipal	MVI	✓		
Nucla	Hopkins Field	AIB	✓		
Paonia	North Fork Valley	7V2	✓		NP
Rangely	Rangely	4V0	✓		✓
Springfield	Springfield Municipal	8V7	✓		✓
Trinidad	Perry Stokes	TAD	✓	NP	✓
Westcliffe	Silver West	C08	✓	✓	NP
Wray	Wray Municipal	2V5	✓		✓
Yuma	Yuma Municipal	2V6	✓		
GA-Rural					
Blanca	Blanca	05V	✓	NP	NP
Brush	Brush Municipal	7V5	✓		
Center	Leach	1V8	✓		
Eads	Eads Municipal	9V7	✓		
Haxtun	Haxtun Municipal	17V	✓		✓
Holly	Holly	K08	✓		
Julesburg	Julesburg Municipal	7V8	✓		
La Veta	Cuchara Valley	07V	✓		
Saguache	Saguache Municipal	04V	✓		
Walden	Walden-Jackson County	33V	✓		
		System-wide Total	**62**	**24**	**35**

Source: 2018 Inventory & Data Form

[15] Airports with Necessary Fuel Type, Available 24/7
[16] Airports that Support the Aerospace Manufacturing, Technology, and/or Testing Industry
[17] Airports with Adequate Utilities

Table C.6. Economic Sustainability SIs

Associated City	Airport Name	FAA ID	Economic Sustainability SIs			
			Development Partnerships[18]	Business Parks[19]	Comprehensive Plans[20]	Agricultural Application[21]
Commercial Service						
Alamosa	San Luis Valley Regional	ALS	✓		✓	✓
Aspen	Aspen-Pitkin County	ASE	✓			
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓	
Cortez	Cortez Municipal	CEZ				
Denver	Denver International	DEN	✓	✓	✓	
Durango	Durango-La Plata County	DRO			✓	
Eagle	Eagle County Regional	EGE	✓		✓	
Grand Junction	Grand Junction Regional	GJT	✓	✓	✓	✓
Gunnison	Gunnison-Crested Butte Regional	GUC	✓		NP	
Hayden	Yampa Valley	HDN	✓		✓	
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓		✓	
Montrose	Montrose Regional	MTJ	✓			
Pueblo	Pueblo Memorial	PUB	✓			
Telluride	Telluride Regional	TEX	✓		✓	
GA-National						
Denver	Centennial	APA	✓	✓	✓	
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	✓	
GA-Regional						
Colorado Springs	Meadow Lake	FLY		✓	✓	
Denver	Colorado Air and Space Port	CFO	✓		✓	✓

Associated City	Airport Name	FAA ID	Economic Sustainability SIs			
			Development Partnerships[18]	Business Parks[19]	Comprehensive Plans[20]	Agricultural Application[21]
Greeley	Greeley-Weld County	GXY	✓		✓	✓
Longmont	Vance Brand	LMO	✓		✓	
Rifle	Rifle Garfield County	RIL			✓	
GA-Local						
Boulder	Boulder Municipal	BDU			✓	
Buena Vista	Central Colorado Regional	AEJ	✓	✓	✓	
Burlington	Kit Carson County	ITR			NP	✓
Canon City	Fremont County	1V6		✓		
Craig	Craig-Moffat	CAG	✓			✓
Del Norte	Astronaut Kent Rominger	RCV	✓		✓	
Delta	Blake Field	AJZ	✓		✓	
Erie	Erie Municipal	EIK	✓	✓	✓	
Fort Morgan	Fort Morgan Municipal	FMM	NP		✓	✓
Glenwood Springs	Glenwood Springs Municipal	GWS			✓	✓
Kremmling	Mc Elroy Airfield	20V	✓		✓	✓
La Junta	La Junta Municipal	LHX	✓	✓	✓	✓
Lamar	Lamar Municipal	LAA	✓		✓	✓
Limon	Limon Municipal	LIC	✓		✓	
Pagosa Springs	Stevens Field	PSO			✓	
Salida	Harriet Alexander Field	ANK	✓		✓	
Steamboat Springs	Steamboat Springs	SBS	✓	✓	✓	
Sterling	Sterling Municipal	STK	✓		✓	✓
Walsenburg	Spanish Peaks Airfield	4V1			✓	

Associated City	Airport Name	FAA ID	Economic Sustainability SIs			
			Development Partnerships[18]	Business Parks[19]	Comprehensive Plans[20]	Agricultural Application[21]
GA-Community						
Akron	Colorado Plains Regional	AKO	✓	✓		✓
Creede	Mineral County Memorial	C24		✓	✓	
Granby	Granby-Grand County	GNB			✓	
Holyoke	Holyoke	HEQ			✓	✓
Las Animas	Las Animas-Bent County	7V9				✓
Leadville	Lake County	LXV	✓		✓	
Meeker	Meeker/Coulter Field	EEO			✓	✓
Monte Vista	Monte Vista Municipal	MVI	✓		✓	✓
Nucla	Hopkins Field	AIB	✓			
Paonia	North Fork Valley	7V2	NP	NP	NP	✓
Rangely	Rangely	4V0			NP	
Springfield	Springfield Municipal	8V7				✓
Trinidad	Perry Stokes	TAD			✓	✓
Westcliffe	Silver West	C08		✓	✓	
Wray	Wray Municipal	2V5	✓	✓		✓
Yuma	Yuma Municipal	2V6			✓	✓
GA-Rural						
Blanca	Blanca	05V	NP	NP	NP	NP
Brush	Brush Municipal	7V5			✓	✓
Center	Leach	1V8				
Eads	Eads Municipal	9V7				✓
Haxtun	Haxtun Municipal	17V				✓

Associated City	Airport Name	FAA ID	Economic Sustainability SIs			
			Development Partnerships[18]	Business Parks[19]	Comprehensive Plans[20]	Agricultural Application[21]
Holly	Holly	K08				✓
Julesburg	Julesburg Municipal	7V8				
La Veta	Cuchara Valley	07V			✓	
Saguache	Saguache Municipal	04V				
Walden	Walden-Jackson County	33V			✓	
		System-wide Total	**34**	**15**	**44**	**26**

Source: 2018 Inventory & Data Form

[18] Airports with Active Development Partnerships with Chambers of Commerce, Tourism Bureaus, Organizations, Industries, Governments, and Recreational User Groups
[19] Airports with Business Parks or Landside Real Estate Development
[20] Airports Recognized in Local and/or Regional Comprehensive Plans
[21] Airports that Support Aerial Agricultural Application

C.5. System Viability

System viability pertains to the promotion of financial responsibility, protection of investments, and the pursuit of decisions which will improve market stability. Airport infrastructure and maintenance requires large sums of capital investment to ensure that they remain in operational condition.

C.5.1. System Viability PMs

1. Percent of Airports with Certified On-Site Weather Reporting (AWOS or ASOS)
2. Percent of Airports with Pavement Maintenance Programs
3. Percent of Airports with an Average Runway and Taxiway Pavement Condition Index (PCI) of 70 or Greater

Table C.7 presents the performance of each system airport in meeting the system viability PMs.

C.5.2. System Viability SIs

1. Percent of Airports That Support Aviation Educational Programs
2. Percent of Airports with Sustainability Plan

Table C.8 presents the performance of each system airport in meeting the system viability SIs. It should be noted that the "Number of Colorado Pilots Per Capita" SI was a system-wide analyses. As such, the evaluation is provided in Chapter 6, but individual airport performance in meeting the SI is not included in **Table C.8**.

Table C.7. System Viability PMs

Associated City	Airport Name	FAA ID	System Viability PMs		
			Certified AWOS/ASOS[22]	Pavement Maintenance[23]	70+ PCI[24]
Commercial Service					
Alamosa	San Luis Valley Regional	ALS	✓	✓	
Aspen	Aspen-Pitkin County	ASE	✓	✓	
Colorado Springs	Colorado Springs Municipal	COS	✓	✓	✓
Cortez	Cortez Municipal	CEZ	✓		✓
Denver	Denver International	DEN	✓	✓	✓
Durango	Durango-La Plata County	DRO	✓	✓	
Eagle	Eagle County Regional	EGE	✓	✓	
Grand Junction	Grand Junction Regional	GJT	✓	✓	
Gunnison	Gunnison-Crested Butte Regional	GUC	✓	✓	✓
Hayden	Yampa Valley	HDN	✓	✓	✓
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓	✓	
Montrose	Montrose Regional	MTJ	✓	✓	
Pueblo	Pueblo Memorial	PUB	✓		
Telluride	Telluride Regional	TEX	✓	✓	✓
GA-National					
Denver	Centennial	APA	✓	✓	✓
Denver	Rocky Mountain Metropolitan	BJC	✓	✓	
GA-Regional					
Colorado Springs	Meadow Lake	FLY	✓	✓	
Denver	Colorado Air and Space Port	CFO	✓	✓	✓

Associated City	Airport Name	FAA ID	System Viability PMs		
			Certified AWOS/ASOS[22]	Pavement Maintenance[23]	70+ PCI[24]
Greeley	Greeley-Weld County	GXY	✓	✓	✓
Longmont	Vance Brand	LMO	✓	✓	✓
Rifle	Rifle Garfield County	RIL	✓	✓	✓
GA-Local					
Boulder	Boulder Municipal	BDU	✓		
Buena Vista	Central Colorado Regional	AEJ	✓	✓	
Burlington	Kit Carson County	ITR	✓	✓	✓
Canon City	Fremont County	1V6	✓		✓
Craig	Craig-Moffat	CAG	✓		
Del Norte	Astronaut Kent Rominger	RCV	✓	✓	✓
Delta	Blake Field	AJZ	✓	✓	✓
Erie	Erie Municipal	EIK	✓		✓
Fort Morgan	Fort Morgan Municipal	FMM	✓	✓	✓
Glenwood Springs	Glenwood Springs Municipal	GWS		✓	
Kremmling	Mc Elroy Airfield	20V	✓	✓	
La Junta	La Junta Municipal	LHX	✓	NP	
Lamar	Lamar Municipal	LAA	✓	✓	✓
Limon	Limon Municipal	LIC	✓	✓	✓
Pagosa Springs	Stevens Field	PSO	✓	✓	✓
Salida	Harriet Alexander Field	ANK	✓	✓	✓
Steamboat Springs	Steamboat Springs	SBS	✓	✓	✓
Sterling	Sterling Municipal	STK	✓	✓	✓

Associated City	Airport Name	FAA ID	System Viability PMs		
			Certified AWOS/ASOS[22]	Pavement Maintenance[23]	70+ PCI[24]
Walsenburg	Spanish Peaks Airfield	4V1	✓	✓	✓
GA-Community					
Akron	Colorado Plains Regional	AKO	✓	✓	
Creede	Mineral County Memorial	C24		✓	
Granby	Granby-Grand County	GNB	✓	✓	✓
Holyoke	Holyoke	HEQ	✓		
Las Animas	Las Animas-Bent County	7V9			
Leadville	Lake County	LXV	✓	✓	
Meeker	Meeker/Coulter Field	EEO	✓	✓	✓
Monte Vista	Monte Vista Municipal	MVI			
Nucla	Hopkins Field	AIB	✓		✓
Paonia	North Fork Valley	7V2		NP	
Rangely	Rangely	4V0	✓	✓	✓
Springfield	Springfield Municipal	8V7			
Trinidad	Perry Stokes	TAD	✓	✓	✓
Westcliffe	Silver West	C08		✓	
Wray	Wray Municipal	2V5	✓		✓
Yuma	Yuma Municipal	2V6	✓		✓
GA-Rural					
Blanca	Blanca	05V		N/A	N/A
Brush	Brush Municipal	7V5			
Center	Leach	1V8			
Eads	Eads Municipal	9V7			

Associated City	Airport Name	FAA ID	System Viability PMs		
			Certified AWOS/ASOS[22]	Pavement Maintenance[23]	70+ PCI[24]
Haxtun	Haxtun Municipal	17V		✓	
Holly	Holly	K08		N/A	N/A
Julesburg	Julesburg Municipal	7V8			
La Veta	Cuchara Valley	07V			
Saguache	Saguache Municipal	04V	✓	N/A	N/A
Walden	Walden-Jackson County	33V	✓		
		System-wide Total	**51**	**42**	**31**

Sources: 2018 Inventory & Data Form; CDOT Pavement Evaluation and Management, 2018

[22] Airports with Certified On-Site Weather Reporting (AWOS or ASOS)
[23] Airports with Pavement Maintenance Programs
[24] Airports with an Average Runway and Taxiway Pavement Condition Index (PCI) of 70 or Greater

Table C.8. System Viability SIs

Associated City	Airport Name	FAA ID	System Viability SIs	
			Educational Programs[25]	Sustainability Plan[26]
Commercial Service				
Alamosa	San Luis Valley Regional	ALS	✓	NP
Aspen	Aspen-Pitkin County	ASE	✓	✓
Colorado Springs	Colorado Springs Municipal	COS	✓	
Cortez	Cortez Municipal	CEZ		
Denver	Denver International	DEN		✓
Durango	Durango-La Plata County	DRO		
Eagle	Eagle County Regional	EGE	✓	✓
Grand Junction	Grand Junction Regional	GJT	✓	
Gunnison	Gunnison-Crested Butte Regional	GUC		
Hayden	Yampa Valley	HDN		
Fort Collins/Loveland	Northern Colorado Regional	FNL	✓	
Montrose	Montrose Regional	MTJ	✓	
Pueblo	Pueblo Memorial	PUB	✓	
Telluride	Telluride Regional	TEX		
GA-National				
Denver	Centennial	APA	✓	✓
Denver	Rocky Mountain Metropolitan	BJC	✓	✓
GA-Regional				
Colorado Springs	Meadow Lake	FLY	✓	
Denver	Colorado Air and Space Port	CFO	✓	

Associated City	Airport Name	FAA ID	System Viability SIs	
			Educational Programs[25]	Sustainability Plan[26]
Greeley	Greeley-Weld County	GXY	✓	
Longmont	Vance Brand	LMO	✓	
Rifle	Rifle Garfield County	RIL		✓
GA-Local				
Boulder	Boulder Municipal	BDU	✓	
Buena Vista	Central Colorado Regional	AEJ	NP	
Burlington	Kit Carson County	ITR	✓	
Canon City	Fremont County	1V6	✓	✓
Craig	Craig-Moffat	CAG		
Del Norte	Astronaut Kent Rominger	RCV		
Delta	Blake Field	AJZ		
Erie	Erie Municipal	EIK	✓	
Fort Morgan	Fort Morgan Municipal	FMM		
Glenwood Springs	Glenwood Springs Municipal	GWS	✓	
Kremmling	Mc Elroy Airfield	20V	✓	
La Junta	La Junta Municipal	LHX	✓	
Lamar	Lamar Municipal	LAA	✓	
Limon	Limon Municipal	LIC	✓	
Pagosa Springs	Stevens Field	PSO		NP
Salida	Harriet Alexander Field	ANK	✓	
Steamboat Springs	Steamboat Springs	SBS	✓	✓
Sterling	Sterling Municipal	STK		

Associated City	Airport Name	FAA ID	System Viability SIs	
			Educational Programs[25]	Sustainability Plan[26]
Walsenburg	Spanish Peaks Airfield	4V1		
GA-Community				
Akron	Colorado Plains Regional	AKO	✓	
Creede	Mineral County Memorial	C24		
Granby	Granby-Grand County	GNB	✓	
Holyoke	Holyoke	HEQ		
Las Animas	Las Animas-Bent County	7V9	✓	
Leadville	Lake County	LXV		✓
Meeker	Meeker/Coulter Field	EEO		
Monte Vista	Monte Vista Municipal	MVI		
Nucla	Hopkins Field	AIB	NP	
Paonia	North Fork Valley	7V2		NP
Rangely	Rangely	4V0	✓	
Springfield	Springfield Municipal	8V7		NP
Trinidad	Perry Stokes	TAD		
Westcliffe	Silver West	C08		NP
Wray	Wray Municipal	2V5	✓	
Yuma	Yuma Municipal	2V6		
GA-Rural				
Blanca	Blanca	05V	NP	NP
Brush	Brush Municipal	7V5		
Center	Leach	1V8		
Eads	Eads Municipal	9V7		

Associated City	Airport Name	FAA ID	System Viability SIs	
			Educational Programs[25]	Sustainability Plan[26]
Haxtun	Haxtun Municipal	17V		
Holly	Holly	K08		
Julesburg	Julesburg Municipal	7V8		
La Veta	Cuchara Valley	07V		NP
Saguache	Saguache Municipal	04V		
Walden	Walden-Jackson County	33V		
		System-wide Total	**30**	**9**

Sources: 2018 Inventory & Data Forms; ESRI ArcGIS Online; 2013-2017 U.S. Census – American Community Survey; Kimley-Horn, 2019

[25] Airports that Support Aviation Educational Programs
[26] Airports with a Sustainability Plan

C.6. Facility and Service Objectives (F&SOs)

The F&SOs presented in this section include the minimum facilities and services each airport should have based on their classification. The F&SOs are not requirements and are provided to help airports optimally serve their users and the airport system as a whole.

The F&SOs are organized in the following groups:

- Airfield Facility Objectives
- Lighting/NAVAIDs Facility Objectives
- Airport Facility Objectives
- Services/Other Objectives

C.6.1. Airfield Facility Objectives

- Airport Reference Code (ARC)
- Primary Runway Length
- Primary Runway Width
- Primary Runway Strength
- Taxiway Type
- Runway Markings

Table C.9 presents the minimum airfield facility objectives by airport classification. **Table C.10** presents the performance of each airport in meeting the airfield facility objectives. Existing conditions for each airport are shown above the objective which is enclosed in parentheses. Any existing conditions that do not meet the objective are shown in red text.

Table C.9. Airfield Facility Objectives by Airport Classification

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Airfield						
ARC	C-III/C-II*	C-II	B-II	B-II	B-I	B-I
Runway Length	Align with Master Plan	Align with Master Plan	Align with Master Plan	Accommodate 100% of small aircraft adjusted for altitude and mean maximum daily temp during hottest month	Accommodate 75% small aircraft adjusted for altitude and mean maximum daily temp during hottest month	Maintain existing
Runway Width	150 feet/100 feet	100 feet	75 feet	75 feet	60 feet	60 feet
Runway Strength	60,000 pounds	60,000 pounds	30,000 pounds	30,000 pounds	12,500 pounds	12,500 pounds
Taxiway	Full parallel	Full parallel	Full parallel	Partial parallel	Turn-arounds	Maintain existing
Runway Markings	Precision	Precision	Non-precision	Non-precision	Non-precision	Basic

**Note: Runway design standards should be determined by individual airports based on airport-specific needs and aviation demand*

Source: Kimley-Horn, 2019

Table C.10. Airfield Facility Objectives

Associated City	Airport Name	FAA ID	Airfield Facilities: ARC	Runway Length	Runway Width	Runway Strength	Taxiway	Runway Markings
Commercial Service								
Alamosa	San Luis Valley Regional	ALS	C-II (C-III/C-II)	8,519 feet (9,000 feet)	100 feet (150 feet/100 feet)	70,000 lbs. DW (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Aspen	Aspen-Pitkin County	ASE	D-III (C-III/C-II)	8,006 feet (9,310 feet)	100 feet (150 feet/100 feet)	160,000 lbs. 2D (60,000 lbs. SW)	Partial parallel (Full parallel)	Non-precision (Precision)
Colorado Springs	Colorado Springs Municipal	COS	C-IV (C-III/C-II)	13,501 feet (13,500 feet)	150 feet (150 feet/100 feet)	1,120,000 lbs. 2D2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Cortez	Cortez Municipal	CEZ	B-II (C-III/C-II)	7,205 feet (7,205 feet)	100 feet (150 feet/100 feet)	56,000 lbs. DW (60,000 lbs. SW)	Full parallel (Full parallel)	Non-precision (Precision)
Denver	Denver International	DEN	D-VI (C-III/C-II)	12,000 feet (Unknown)	150 feet (150 feet/100 feet)	1,085,000 lbs. 2D2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Durango	Durango-La Plata County	DRO	D-IV (C-III/C-II)	9,201 feet (9,900 feet)	150 feet (150 feet/100 feet)	210,000 lbs. 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Eagle	Eagle County Regional	EGE	D-IV (C-III/C-II)	9,000 feet (10,000 feet)	150 feet (150 feet/100 feet)	255,000 lbs. 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Non-precision (Precision)
Grand Junction	Grand Junction Regional	GJT	D-III (C-III/C-II)	10,501 feet (10,501 feet)	150 feet (150 feet/100 feet)	260,000 lbs. 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Gunnison	Gunnison-Crested Butte Regional	GUC	C-IV (C-III/C-II)	9,400 feet (9,400 feet)	150 feet (150 feet/100 feet)	250,000 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Hayden	Yampa Valley	HDN	C-IV (C-III/C-II)	10,000 feet (10,000 feet)	150 feet (150 feet/100 feet)	260,000 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Fort Collins/Loveland	Northern Colorado Regional	FNL	C-III (C-III/C-II)	8,500 feet (9,500 - 10,000 feet)	100 feet (150 feet/100 feet)	130,000 lbs. 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Montrose	Montrose Regional	MTJ	D-IV (C-III/C-II)	10,000 feet (10,000 feet)	150 feet (150 feet/100 feet)	265,000 lbs. 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Pueblo	Pueblo Memorial	PUB	C-III (C-III/C-II)	10,496 feet (10,496 feet)	150 feet (150 feet/100 feet)	250,000 lbs. 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
Telluride	Telluride Regional	TEX	C-III (C-III/C-II)	7,111 feet (7,111 feet)	100 feet (150 feet/100 feet)	89,000 lbs. DW (60,000 lbs. SW)	Partial parallel (Full parallel)	Non-precision (Precision)
GA-National								
Denver	Centennial	APA	D-III (C-II)	10,001 feet (10,001 feet)	100 feet (100 feet)	75,000 lbs. DW (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)

Associated City	Airport Name	FAA ID	Airfield Facilities					
			ARC	Runway Length	Runway Width	Runway Strength	Taxiway	Runway Markings
Denver	Rocky Mountain Metropolitan	BJC	C-II (C-II)	9,000 feet (14,000 feet)	100 feet (100 feet)	150,000 lbs. 2D (60,000 lbs. SW)	Full parallel (Full parallel)	Precision (Precision)
GA-Regional								
Colorado Springs	Meadow Lake	FLY	B-I (B-II)	6,000 feet (6,000 feet)	60 feet (75 feet)	12,500 lbs. SW (30,000 lbs. SW)	Full parallel (Full parallel)	Visual (Non-precision))
Denver	Colorado Air and Space Port	CFO	C-II (B-II)	8,000 feet (8,000 feet)	100 feet (75 feet)	40,000 lbs. DW (30,000 lbs. SW)	Full parallel (Full parallel)	Precision (Non-precision))
Greeley	Greeley-Weld County	GXY	C-II (B-II)	10,000 feet (10,000 feet)	100 feet (75 feet)	45,000 lbs. DW (30,000 lbs. SW)	Full parallel (Full parallel)	Precision (Non-precision)
Longmont	Vance Brand	LMO	B-II (B-II)	4,799 feet (6,390 feet)	75 feet (75 feet)	30,000 lbs. SW (30,000 lbs. SW)	Full parallel (Full parallel)	Visual (Non-precision)
Rifle	Rifle Garfield County	RIL	D-II (B-II)	7,000 feet (7,000 feet)	100 feet (75 feet)	250,000 lbs. 2D (30,000 lbs. SW)	Full parallel (Full parallel)	Non-precision (Non-precision)
GA-Local								
Boulder	Boulder Municipal	BDU	B-II (B-II)	4,100 feet (6,500 feet)	75 feet (75 feet)	16,000 lbs. SW (30,000 lbs. SW)	Full parallel (Partial parallel)	Visual (Non-precision)
Buena Vista	Central Colorado Regional	AEJ	B-II (B-II)	8,303 feet (9,400 feet)	75 feet (75 feet)	30,000 lbs. DW (30,000 lbs. SW)	Full parallel (Partial parallel)	Non-precision (Non-precision)
Burlington	Kit Carson County	ITR	B-II (B-II)	5,199 feet (5,600 feet)	75 feet (75 feet)	17,000 lbs. DW (30,000 lbs. SW)	Partial parallel (Partial parallel)	Non-precision (Non-precision)
Canon City	Fremont County	1V6	B-II (B-II)	5,399 feet (6,700 feet)	75 feet (75 feet)	26,000 lbs. DW (30,000 lbs. SW)	Full parallel (Partial parallel)	Non-precision (Non-precision)
Craig	Craig-Moffat	CAG	B-II (B-II)	5,606 feet (6,500 feet)	100 feet (75 feet)	40,000 lbs. DW (30,000 lbs. SW)	Turn-arounds (Partial parallel)	Non-precision (Non-precision)
Del Norte	Astronaut Kent Rominger	RCV	B-II (B-II)	6,051 feet (9,200 feet)	75 feet (75 feet)	12,500 lbs. SW (30,000 lbs. SW)	Partial parallel (Partial parallel)	Non-precision (Non-precision)
Delta	Blake Field	AJZ	B-II (B-II)	5,598 feet (6,500 feet)	75 feet (75 feet)	30,000 lbs. DW (30,000 lbs. SW)	Partial parallel (Partial parallel)	Non-precision (Non-precision)
Erie	Erie Municipal	EIK	B-I (B-II)	4,700 feet (6,500 feet)	60 feet (75 feet)	12,500 lbs. SW (30,000 lbs. SW)	Full parallel (Partial parallel)	Visual (Non-precision)
Fort Morgan	Fort Morgan Municipal	FMM	B-II (B-II)	5,731 feet (5,900 feet)	75 feet (75 feet)	30,000 lbs. SW (30,000 lbs. SW)	Turn-arounds (Partial parallel)	Non-precision (Non-precision)
Glenwood Springs	Glenwood Springs Municipal	GWS	B-II (B-II)	3,305 feet (7,200 feet)	50 feet (75 feet)	15,000 lbs. SW (30,000 lbs. SW)	Full parallel (Partial parallel)	Visual (Non-precision)

Associated City	Airport Name	FAA ID	Airfield Facilities					
			ARC	Runway Length	Runway Width	Runway Strength	Taxiway	Runway Markings
Kremmling	Mc Elroy Airfield	20V	B-II (B-II)	5,540 feet (9,100 feet)	75 feet (75 feet)	68,000 lbs. DW (30,000 lbs. SW)	Turn-arounds (Partial parallel)	Non-precision (Non-precision)
La Junta	La Junta Municipal	LHX	B-II (B-II)	6,849 feet (5,400 feet)	75 feet (75 feet)	90,000 lbs. 2D (30,000 lbs. SW)	Full parallel (Partial parallel)	Non-precision (Non-precision)
Lamar	Lamar Municipal	LAA	B-II (B-II)	6,304 feet (5,200 feet)	100 feet (75 feet)	100,000 lbs. 2D (30,000 lbs. SW)	Full parallel (Partial parallel)	Non-precision (Non-precision)
Limon	Limon Municipal	LIC	B-I (B-II)	4,700 feet (6,100 feet)	60 feet (75 feet)	12,500 lbs. SW (30,000 lbs. SW)	Partial parallel (Partial parallel)	Visual (Non-precision)
Pagosa Springs	Stevens Field	PSO	C-II (B-II)	8,100 feet (9,000 feet)	100 feet (75 feet)	70,000 lbs. DW (30,000 lbs. SW)	Full parallel (Partial parallel)	Non-precision (Non-precision)
Salida	Harriet Alexander Field	ANK	B-II (B-II)	7,351 feet (9,100 feet)	75 feet (75 feet)	60,000 lbs. DW (30,000 lbs. SW)	Partial parallel (Partial parallel)	Visual (Non-precision)
Steamboat Springs	Steamboat Springs	SBS	B-II (B-II)	4,452 feet (8,100 feet)	100 feet (75 feet)	60,000 lbs. DW (30,000 lbs. SW)	Connector (Partial parallel)	Visual (Non-precision)
Sterling	Sterling Municipal	STK	B-II (B-II)	5,201 feet (5,600 feet)	75 feet (75 feet)	30,000 lbs. SW (30,000 lbs. SW)	Full parallel (Partial parallel)	Non-precision (Non-precision)
Walsenburg	Spanish Peaks Airfield	4V1	B-I (B-II)	4,504 feet (7,300 feet)	75 feet (75 feet)	17,000 lbs. DW (30,000 lbs. SW)	Connector (Partial parallel)	Non-precision (Non-precision)
GA-Community								
Akron	Colorado Plains Regional	AKO	B-II (B-I)	7,001 feet (5,900 feet)	100 feet (60 feet)	125,000 lbs. 2D (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)
Creede	Mineral County Memorial	C24	B-I (B-I)	6,880 feet (>10,000 feet)	60 feet (60 feet)	12,500 lbs. SW (12,500 lbs. SW)	Connector (Turn-arounds)	Visual (Non-precision)
Granby	Granby-Grand County	GNB	B-II (B-I)	5,001 feet (>10,000 feet)	75 feet (60 feet)	12,500 lbs. DW (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)
Holyoke	Holyoke	HEQ	B-II (B-I)	5,000 feet (5,000 feet)	75 feet (60 feet)	12,500 lbs. SW (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)
Las Animas	Las Animas-Bent County	7V9	B-I (B-I)	3,870 feet (5,200 feet)	40 feet (60 feet)	5,000 lbs. SW (12,500 lbs. SW)	Turn-arounds (Turn-arounds)	Visual (Non-precision)
Leadville	Lake County	LXV	B-II (B-I)	6,400 feet (>10,000 feet)	75 feet (60 feet)	20,000 lbs. DW (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)
Meeker	Meeker/Coulter Field	EEO	B-II (B-I)	6,503 feet (7,700 feet)	100 feet (60 feet)	60,000 lbs. DW (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)

Associated City	Airport Name	FAA ID	Airfield Facilities					
			ARC	Runway Length	Runway Width	Runway Strength	Taxiway	Runway Markings
Monte Vista	Monte Vista Municipal	MVI	B-I (B-I)	5,901 feet (9,100 feet)	60 feet (60 feet)	12,500 lbs. SW (12,500 lbs. SW)	Connector (Turn-arounds)	Non-precision (Non-precision)
Nucla	Hopkins Field	AIB	B-II (B-I)	5,210 feet (7,450 feet)	75 feet (60 feet)	9,000 lbs. SW (12,500 lbs. SW)	Connector (Turn-arounds)	Non-precision (Non-precision)
Paonia	North Fork Valley	7V2	A-I (B-I)	4,500 feet (7,150 feet)	60 feet (60 feet)	21,000 lbs. SW (12,500 lbs. SW)	Turn-arounds (Turn-arounds)	Visual (Non-precision)
Rangely	Rangely	4V0	B-II (B-I)	6,409 feet (6,500 feet)	75 feet (60 feet)	28,000 lbs. DW (12,500 lbs. SW)	Full parallel (Turn-arounds)	Non-precision (Non-precision)
Springfield	Springfield Municipal	8V7	B-I (B-I)	5,000 feet (5,400 feet)	60 feet (60 feet)	12,500 lbs. SW (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)
Trinidad	Perry Stokes	TAD	B-II (B-I)	5,500 feet (7,000 feet)	75 feet (60 feet)	50,000 lbs. DW (12,500 lbs. SW)	Turn-arounds (Turn-arounds)	Non-precision (Non-precision)
Westcliffe	Silver West	C08	B-I (B-I)	6,954 feet (9,900 feet)	55 feet (60 feet)	NP	Connector (Turn-arounds)	Visual (Non-precision)
Wray	Wray Municipal	2V5	B-II (B-I)	5,399 feet (4,900 feet)	75 feet (60 feet)	16,000 lbs. SW (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)
Yuma	Yuma Municipal	2V6	B-II (B-I)	4,200 feet (5,100 feet)	75 feet (60 feet)	12,500 lbs. SW (12,500 lbs. SW)	Partial parallel (Turn-arounds)	Non-precision (Non-precision)
GA-Rural								
Blanca	Blanca	05V	A-I (B-I)	6,160 feet (6,100 feet)	52 feet (60 feet)	N/A (Dirt)	None (Maintain existing)	N/A
Brush	Brush Municipal	7V5	B-I (B-I)	4,300 feet (4,300 feet)	60 feet (60 feet)	6,000 lbs. SW (12,500 lbs. SW)	Connector (Maintain existing)	Visual (Basic)
Center	Leach	1V8	A-I (B-I)	7,000 feet (7,000 feet)	50 feet (60 feet)	12,000 lbs. SW (12,500 lbs. SW)	Connector (Maintain existing)	Non-standard (Basic)
Eads	Eads Municipal	9V7	A-I (B-I)	3,860 feet (3,860 feet)	60 feet (60 feet)	NP	Connector (Maintain existing)	None (Basic)
Haxtun	Haxtun Municipal	17V	A-I (B-I)	3,860 feet (3,860 feet)	40 feet (60 feet)	NP	None (Maintain existing)	Visual (Basic)
Holly	Holly	K08	A-I (B-I)	4,140 feet (4,140 feet)	40 feet (60 feet)	N/A (Dirt)	Turn-arounds (Maintain existing)	N/A
Julesburg	Julesburg Municipal	7V8	B-I (B-I)	4,100 feet (4,100 feet)	60 feet (60 feet)	12,000 lbs. SW (12,500 lbs. SW)	Partial parallel (Maintain existing)	Non-standard (Basic)

Associated City	Airport Name	FAA ID	Airfield Facilities					
			ARC	Runway Length	Runway Width	Runway Strength	Taxiway	Runway Markings
La Veta	Cuchara Valley	07V	A-I (B-I)	5,798 feet (5,798 feet)	60 feet (60 feet)	NP	Connector (Maintain existing)	Visual (Maintain existing)
Saguache	Saguache Municipal	04V	A-I (B-I)	7,957 feet (7,957 feet)	55 feet (60 feet)	N/A (Dirt)	None (Maintain existing)	N/A
Walden	Walden-Jackson County	33V	B-II (B-I)	5,900 feet (5,900 feet)	75 feet (60 feet)	25,000 lbs. SW (12,500 lbs. SW)	Connector (Maintain existing)	Non-precision (Basic)
		System-wide Total	**53**	**29**	**55**	**44**	**59**	**45**

Sources: 2018 Inventory & Data Form; Google Earth; FAA AC 150/5300-13A, Change 1, Airport Design; Individual airport master plans; ALPs, 2019

C.6.2. Lighting/NAVAIDs Facility Objectives

- Primary Approach
- Visual Aids
- Primary Runway Lighting
- Weather Reporting

Table C.11 presents the minimum lighting/NAVAIDs facility objectives by airport classification. **Table C.12** presents the performance of each airport in meeting the lighting/NAVAIDs facility objectives. Existing conditions for each airport are shown above the objective which is enclosed in parentheses. Any existing conditions that do not meet the objective are shown in red text.

Table C.11. Lighting/Navigational Aids (NAVAIDs) Facility Objectives by Airport Classification

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Lighting/Navigational Aids (NAVAIDs)						
Primary Approach	Precision	Precision	Non-precision with vertical guidance	Non-precision	Non-precision	Maintain existing
Visual Aids	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	ALS, rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Rotating beacon, lighted wind cone, REILs, VGSIs	Wind cone
Primary Runway Lighting	HIRL or MIRL	HIRL or MIRL	MIRL	MIRL	MIRL	Reflectors
Weather Reporting	On-site ASOS or AWOS	On-site ASOS or AWOS	On-site ASOS or AWOS	On-site ASOS, AWOS, or Automated Unicom	On-site ASOS, AWOS, or Automated Unicom	Non-certified weather

Source: Kimley-Horn, 2019

Table C.12. Lighting/NAVAIDs Facility Objectives

Associated City	Airport Name	FAA ID	Lighting/NAVAIDs Facilities			
			Primary Approach	Visual Aids	Runway Lighting	Weather Reporting
Commercial Service						
Alamosa	San Luis Valley Regional	ALS	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	ASOS-3 (On-site ASOS or AWOS)
Aspen	Aspen-Pitkin County	ASE	Non-precision (Precision)	MALSF, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)
Colorado Springs	Colorado Springs Municipal	COS	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)
Cortez	Cortez Municipal	CEZ	Non-precision (Precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)
Denver	Denver International	DEN	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)
Durango	Durango-La Plata County	DRO	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)
Eagle	Eagle County Regional	EGE	Non-precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	AWOS-3PT (On-site ASOS or AWOS)
Grand Junction	Grand Junction Regional	GJT	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	AWOS-3 (On-site ASOS or AWOS)
Gunnison	Gunnison-Crested Butte Regional	GUC	Precision (Precision)	MALSF, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	AWOS-3PT (On-site ASOS or AWOS)
Hayden	Yampa Valley	HDN	Precision (Precision)	MALSF, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	AWOS-3PT (On-site ASOS or AWOS)
Fort Collins/Loveland	Northern Colorado Regional	FNL	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	AWOS-3PT (On-site ASOS or AWOS)
Montrose	Montrose Regional	MTJ	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)
Pueblo	Pueblo Memorial	PUB	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)
Telluride	Telluride Regional	TEX	Non-precision (Precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	AWOS-3 (On-site ASOS or AWOS)
GA-National						
Denver	Centennial	APA	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs, (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (HIRL or MIRL)	ASOS (On-site ASOS or AWOS)

Associated City	Airport Name	FAA ID	Lighting/NAVAIDs Facilities			
			Primary Approach	Visual Aids	Runway Lighting	Weather Reporting
Denver	Rocky Mountain Metropolitan	BJC	Precision (Precision)	MALSR, rotating beacon, lighted wind cone, REILs, VGSIs (ALS, rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (HIRL or MIRL)	AWOS-3 (On-site ASOS or AWOS)
			GA-Regional			
Colorado Springs	Meadow Lake	FLY	Visual (Non-precision with vertical guidance)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3PT (On-site ASOS or AWOS)
Denver	Colorado Air and Space Port	CFO	Precision (Non-precision with vertical guidance)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (MIRL)	AWOS-3 (On-site ASOS or AWOS)
Greeley	Greeley-Weld County	GXY	Precision (Non-precision with vertical guidance)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3PT (On-site ASOS or AWOS)
Longmont	Vance Brand	LMO	Non-precision (Non-precision with vertical guidance)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS or AWOS)
Rifle	Rifle Garfield County	RIL	Precision (Non-precision with vertical guidance)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (MIRL)	ASOS (On-site ASOS or AWOS)
			GA-Local			
Boulder	Boulder Municipal	BDU	Visual (Non-precision)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Buena Vista	Central Colorado Regional	AEJ	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Burlington	Kit Carson County	ITR	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Canon City	Fremont County	1V6	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Craig	Craig-Moffat	CAG	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Del Norte	Astronaut Kent Rominger	RCV	Non-precision (Non-precision)	Rotating beacon, REILs, VGSIs, wind cone (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3PT (On-site ASOS, AWOS, or Automated Unicom)
Delta	Blake Field	AJZ	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, VGSI, (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)

Associated City	Airport Name	FAA ID	Lighting/NAVAIDs Facilities			
			Primary Approach	Visual Aids	Runway Lighting	Weather Reporting
Erie	Erie Municipal	EIK	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3PT (On-site ASOS, AWOS, or Automated Unicom)
Fort Morgan	Fort Morgan Municipal	FMM	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Glenwood Springs	Glenwood Springs Municipal	GWS	Visual (Non-precision)	VGSIs, wind cone (Rotating beacon, lighted wind cone, REILs, VGSIs)	None (MIRL)	Automated UNICOM (On-site ASOS, AWOS, or Automated Unicom)
Kremmling	Mc Elroy Airfield	20V	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
La Junta	La Junta Municipal	LHX	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Lamar	Lamar Municipal	LAA	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Limon	Limon Municipal	LIC	Visual (Non-precision)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Pagosa Springs	Stevens Field	PSO	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Salida	Harriet Alexander Field	ANK	Visual (Non-precision)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Steamboat Springs	Steamboat Springs	SBS	Visual (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Sterling	Sterling Municipal	STK	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)

Associated City	Airport Name	FAA ID	Lighting/NAVAIDs Facilities			
			Primary Approach	Visual Aids	Runway Lighting	Weather Reporting
Walsenburg	Spanish Peaks Airfield	4V1	Non-precision (Non-precision)	VGSIs, wind cone (Rotating beacon, lighted wind cone, REILs, VGSIs)	None (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
GA-Community						
Akron	Colorado Plains Regional	AKO	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Creede	Mineral County Memorial	C24	Visual (Non-precision)	Wind cone (Rotating beacon, lighted wind cone, REILs, VGSIs)	None (MIRL)	None (On-site ASOS, AWOS, or Automated Unicom)
Granby	Granby-Grand County	GNB	Visual (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3PT (On-site ASOS, AWOS, or Automated Unicom)
Holyoke	Holyoke	HEQ	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Las Animas	Las Animas-Bent County	7V9	Visual (Non-precision)	Lighted wind cone, REILs (Rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (MIRL)	None (On-site ASOS, AWOS, or Automated Unicom)
Leadville	Lake County	LXV	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Meeker	Meeker/Coulter Field	EEO	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Monte Vista	Monte Vista Municipal	MVI	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	None (On-site ASOS, AWOS, or Automated Unicom)
Nucla	Hopkins Field	AIB	Visual (Non-precision)	Rotating beacon, lighted wind cone (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Paonia	North Fork Valley	7V2	Visual (Non-precision)	Lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (MIRL)	None (On-site ASOS, AWOS, or Automated Unicom)

Associated City	Airport Name	FAA ID	Lighting/NAVAIDs Facilities			
			Primary Approach	Visual Aids	Runway Lighting	Weather Reporting
Rangely	Rangely	4V0	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3PT (On-site ASOS, AWOS, or Automated Unicom)
Springfield	Springfield Municipal	8V7	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	Automated UNICOM (On-site ASOS, AWOS, or Automated Unicom)
Trinidad	Perry Stokes	TAD	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	HIRL (MIRL)	ASOS (On-site ASOS, AWOS, or Automated Unicom)
Westcliffe	Silver West	C08	Visual (Non-precision)	Wind cone (Rotating beacon, lighted wind cone, REILs, VGSIs)	None (MIRL)	None (On-site ASOS, AWOS, or Automated Unicom)
Wray	Wray Municipal	2V5	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
Yuma	Yuma Municipal	2V6	Non-precision (Non-precision)	Rotating beacon, lighted wind cone, REILs, VGSIs (Rotating beacon, lighted wind cone, REILs, VGSIs)	MIRL (MIRL)	AWOS-3 (On-site ASOS, AWOS, or Automated Unicom)
GA-Rural						
Blanca	Blanca	05V	Visual (Maintain existing)	Rotating beacon, wind cone (Wind cone)	None (Reflectors)	None (Non-certified weather)
Brush	Brush Municipal	7V5	Visual (Maintain existing)	Wind cone (Wind cone)	Reflectors (Reflectors)	Automated UNICOM (Non-certified weather)
Center	Leach	1V8	Visual (Maintain existing)	Rotating beacon, VGSIs, wind cone (Wind cone)	LIRL (Reflectors)	None (Non-certified weather)
Eads	Eads Municipal	9V7	Visual (Maintain existing)	Lighted wind cone (Wind cone)	MIRL (Reflectors)	None (Non-certified weather)
Haxtun	Haxtun Municipal	17V	Visual (Maintain existing)	Lighted wind cone (Wind cone)	Reflectors (Reflectors)	None (Non-certified weather)
Holly	Holly	K08	Visual (Maintain existing)	Wind cone (Wind cone)	Reflectors (Reflectors)	None (Non-certified weather)
Julesburg	Julesburg Municipal	7V8	Visual (Maintain existing)	Rotating beacon, lighted wind cone (Wind cone)	MIRL (Reflectors)	None (Non-certified weather)

Associated City	Airport Name	FAA ID	Lighting/NAVAIDs Facilities			
			Primary Approach	Visual Aids	Runway Lighting	Weather Reporting
La Veta	Cuchara Valley	07V	Visual (Maintain existing)	Rotating, beacon, wind cone (Wind cone)	MIRL (Reflectors)	None (Non-certified weather)
Saguache	Saguache Municipal	04V	Visual (Maintain existing)	Wind cone (Wind cone)	None (Reflectors)	AWOS-3P (Non-certified weather)
Walden	Walden-Jackson County	33V	Visual (Maintain existing)	Rotating beacon, lighted wind cone, VGSIs (Wind cone)	MIRL (Reflectors)	AWOS-3 (Non-certified weather)
System-wide Total			**49**	**46**	**60**	**54**

Sources: 2018 Inventory & Data Form; FAA 5010 Master Record; SkyVector, 2019

C.6.3. Airport Facility Objectives

- Terminal Capacity
- Apron Tie-Downs
- Hangars
- Maintenance/SRE Storage Building
- Electric Vehicle Charging Stations
- Perimeter Security

Table C.13 presents the minimum airport facility objectives by airport classification. **Table C.14** presents the performance of each airport in meeting the airport facility objectives. Existing conditions for each airport are shown above the objective which is enclosed in parentheses. Any existing conditions that do not meet the objective are shown in red text.

Table C.13. Airport Facility Objectives by Airport Classification

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Airport Facilities						
Terminal Capacity (CS and/or GA)	Acceptable ratio of terminal square footage and commercial apron for passenger enplanements and commercial operations	Acceptable ratio of GA terminal square footage to peak hour passengers	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Facility with restrooms, flight planning space, Wi-Fi, and rest area	Based on community need
Apron Tie-Downs	Tie-downs for 20% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 40% of based aircraft fleet plus 50% of weekly average overnight transient storage during peak season	Tie-downs for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	Tie-downs for 60% of based aircraft fleet plus 25% of weekly average overnight transient storage during peak season	Tie-downs for 100% of based aircraft fleet
Hangars	Hangars for 80% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 60% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 60% of based aircraft fleet plus 50% of weekly average overnight transient storage	Hangars for 50% of based aircraft fleet plus 25% of weekly average overnight transient storage	Hangars for 40% of based aircraft fleet plus weekly average overnight transient storage based on community needs	Based on community need
Maintenance/SRE Storage Building	Yes	Yes	Yes	Yes	Based on community need	Based on community need

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Electric Vehicle Charging Station	Yes	Yes	Yes	Yes	Based on community need	Based on community need
Perimeter Security	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	Full perimeter fencing with security gates and appropriate signage	AOA three-wire fencing with appropriate signage	AOA three-wire fencing with appropriate signage	AOA three-wire fencing with appropriate signage

Source: Kimley-Horn, 2019

Table C.14. Airport Facility Objectives

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
Commercial Service									
Alamosa	San Luis Valley Regional	ALS	8,400 square feet (15,000 square feet)	37 spaces (9 spaces)	42 spaces (31 spaces)	2 spaces (1 space)			Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Aspen	Aspen-Pitkin County	ASE	45,000 square feet (144,000 square feet)	104 spaces (53 spaces)	0 spaces (72 spaces)	5 spaces (35 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Colorado Springs	Colorado Springs Municipal	COS	294,495 square feet (216,000 square feet)	34 spaces (116 spaces)	140 spaces (164 spaces)	15 space (75 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Cortez	Cortez Municipal	CEZ	3,500 square feet (15,000 square feet)	47 spaces (7 spaces)	30 spaces (25 spaces)	3 spaces (0 spaces)	✓		Full perimeter wildlife fencing (Full perimeter fencing with security gates and appropriate signage)
Denver	Denver International	DEN	7,496,972 square feet (3,136,000 square feet)	12 spaces (29 spaces)	3 spaces (2 spaces)	3 spaces (28 spaces)	✓	✓	Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Durango	Durango-La Plata County	DRO	37,617 square feet (54,000 square feet)	62 spaces (23 spaces)	66 spaces (51 spaces)	0 spaces (10 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Eagle	Eagle County Regional	EGE	120,000 square feet (108,000 square feet)	10 spaces (43 spaces)	84 spaces (73 spaces)	25 spaces (24 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Grand Junction	Grand Junction Regional	GJT	76,000 square feet (108,000 square feet)	65 spaces (59 spaces)	120 spaces (101 spaces)	120 spaces (33 spaces)			Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
Gunnison	Gunnison-Crested Butte Regional	GUC	34,800 square feet (54,000 square feet)	25 spaces (27 spaces)	10 spaces (25 spaces)	0 spaces (20 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Hayden	Yampa Valley	HDN	71,695 square feet (108,000 square feet)	7 spaces (6 spaces)	4 spaces (10 spaces)	4 spaces (3 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Fort Collins/Loveland	Northern Colorado Regional	FNL	4,020 square feet (15,000 square feet)	46 spaces (54 spaces)	212 spaces (204 spaces)	2 spaces (3 spaces)	✓	✓	Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Montrose	Montrose Regional	MTJ	35,000 square feet (72,000 square feet)	20 spaces (27 spaces)	111 spaces (65 spaces)	25 space (10 spaces)			Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Pueblo	Pueblo Memorial	PUB	23,531 square feet (30,000 square feet)	17 spaces (29 spaces)	110 spaces (104 spaces)	10 spaces (3 spaces)			Full perimeter 3-wire fencing (Full perimeter fencing with security gates and appropriate signage)
Telluride	Telluride Regional	TEX	20,000 square feet (15,000 square feet)	18 spaces (122 spaces)	15 spaces (36 spaces)	1 space (113 spaces)			Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
GA-National									
Denver	Centennial	APA	60,100 square feet (40,721 square feet)	263 spaces (440 spaces)	559 spaces (528 spaces)	33 spaces (88 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Denver	Rocky Mountain Metropolitan	BJC	25,000 square feet (20,926 square feet)	280 spaces (308 spaces)	199 spaces (255 spaces)	0 spaces (138 spaces)			Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
GA-Regional									
Colorado Springs	Meadow Lake	FLY	No restroom or pilot lounge available. Facility has Wi-Fi (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	93 spaces (183 spaces)	417 spaces (270 spaces)	0 spaces (3 spaces)			Terminal apron area security fencing (Full perimeter fencing with security gates and appropriate signage)
Denver	Colorado Air and Space Port	CFO	Facility with restrooms and pilot lounge (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	260 spaces (184 spaces)	291 spaces (261 spaces)	2 spaces (10 spaces)	✓		Partial perimeter 3-wire fencing (Full perimeter fencing with security gates and appropriate signage)
Greeley	Greeley-Weld County	GXY	Facility with restrooms, pilot lounge, and Wi-Fi (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	44 spaces (88 spaces)	218 spaces (121 spaces)	8 spaces (7 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
Longmont	Vance Brand	LMO	Facility with restrooms and pilot lounge (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	48 spaces (124 spaces)	271 spaces (177 spaces)	2 spaces (6 spaces)			Partial perimeter wildlife fencing (Full perimeter fencing with security gates and appropriate signage)
Rifle	Rifle Garfield County	RIL	Facility with restrooms, pilot lounge, and Wi-Fi (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	40 spaces (35 spaces)	25 spaces (29 spaces)	5 spaces (15 spaces)	✓		Full perimeter fencing with security gates and appropriate signage (Full perimeter fencing with security gates and appropriate signage)
GA-Local									
Boulder	Boulder Municipal	BDU	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	68 spaces (60 spaces)	104 spaces (58 spaces)	0 spaces (2 spaces)			AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Buena Vista	Central Colorado Regional	AEJ	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	20 spaces (3 spaces)	30 spaces (2 spaces)	4 spaces (1 space)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
Burlington	Kit Carson County	ITR	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	13 spaces (12 spaces)	18 spaces (12 spaces)	2 spaces (0 spaces)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Canon City	Fremont County	1V6	Facility with only restrooms and Wi-Fi (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	49 spaces (41 spaces)	81 spaces (41 spaces)	0 spaces (1 space)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Craig	Craig-Moffat	CAG	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	16 spaces (15 spaces)	20 spaces (13 spaces)	0 spaces (2 spaces)			AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Del Norte	Astronaut Kent Rominger	RCV	Facility with Wi-Fi (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	16 spaces (21 spaces)	45 spaces (20 spaces)	0 spaces (1 space)			Partial perimeter wildlife fencing (AOA three-wire fencing with appropriate signage)
Delta	Blake Field	AJZ	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	21 spaces (35 spaces)	64 spaces (33 spaces)	6 spaces (2 spaces)			AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Erie	Erie Municipal	EIK	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	78 spaces (106 spaces)	214 spaces (104 spaces)	2 spaces (3 spaces)			Minimal fencing (AOA three-wire fencing with appropriate signage)
Fort Morgan	Fort Morgan Municipal	FMM	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	13 spaces (17 spaces)	27 spaces (16 spaces)	0 spaces (1 space)			None (AOA three-wire fencing with appropriate signage)
Glenwood Springs	Glenwood Springs Municipal	GWS	None (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	30 spaces (35 spaces)	64 spaces (35 spaces)	0 spaces (1 space)			AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
Kremmling	Mc Elroy Airfield	20V	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	21 spaces (13 spaces)	18 spaces (11 spaces)	1 space (2 spaces)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
La Junta	La Junta Municipal	LHX	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	17 spaces (13 spaces)	16 spaces (12 spaces)	2 spaces (1 space)			AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Lamar	Lamar Municipal	LAA	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	27 spaces (15 spaces)	34 spaces (14 spaces)	2 spaces (1 space)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Limon	Limon Municipal	LIC	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	20 spaces (11 spaces)	18 spaces (11 spaces)	0 spaces (0 spaces)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Pagosa Springs	Stevens Field	PSO	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	23 spaces (22 spaces)	54 spaces (20 spaces)	0 spaces (2 spaces)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Salida	Harriet Alexander Field	ANK	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	23 spaces (23 spaces)	28 spaces (21 spaces)	1 space (2 spaces)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Steamboat Springs	Steamboat Springs	SBS	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	17 spaces (50 spaces)	48 spaces (43 spaces)	1 space (7 spaces)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Sterling	Sterling Municipal	STK	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	8 spaces (18 spaces)	34 spaces (17 spaces)	2 spaces (1 space)			AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Walsenburg	Spanish Peaks Airfield	4V1	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	12 spaces (10 spaces)	23 spaces (10 spaces)	0 spaces (0 spaces)	✓		AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
GA-Community									
Akron	Colorado Plains Regional	AKO	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	18 spaces (11 spaces)	12 spaces (6 spaces)	1 space (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Creede	Mineral County Memorial	C24	Facility with restrooms and pilot lounge (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	8 spaces (7 spaces)	10 spaces (4 spaces)	0 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Granby	Granby-Grand County	GNB	Facility with restroom and pilot lounge (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	20 spaces (18 spaces)	49 spaces (10 spaces)	0 spaces (Based on Community Need)	Has SRE building (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Holyoke	Holyoke	HEQ	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	8 spaces (9 spaces)	17 spaces (6 spaces)	0 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Las Animas	Las Animas-Bent County	7V9	None (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	6 spaces (7 spaces)	8 spaces (5 spaces)	1 space (Based on Community Need)	NP (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Leadville	Lake County	LXV	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	10 spaces (4 spaces)	8 spaces (2 spaces)	6 space (Based on Community Need)	Has SRE building (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Meeker	Meeker/Coulter Field	EEO	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	10 spaces (7 spaces)	12 spaces (4 spaces)	10 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Monte Vista	Monte Vista Municipal	MVI	Facility with restroom and pilot lounge (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	13 spaces (10 spaces)	16 spaces (6 spaces)	0 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars: Based	Hangars: Transient	Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
Nucla	Hopkins Field	AIB	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	12 spaces (7 spaces)	12 spaces (4 spaces)	0 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Paonia	North Fork Valley	7V2	None (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	27 spaces (14 spaces)	12 spaces (8 spaces)	0 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Rangely	Rangely	4V0	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	38 spaces (12 spaces)	12 spaces (8 spaces)	0 spaces (Based on Community Need)	Has SRE building (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Springfield	Springfield Municipal	8V7	Facility with restroom and pilot lounge (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	8 spaces (6 spaces)	18 spaces (4 spaces)	0 spaces (Based on Community Need)	Has SRE building (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Trinidad	Perry Stokes	TAD	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	10 spaces (14 spaces)	22 spaces (8 spaces)	0 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Westcliffe	Silver West	C08	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	10 spaces (15 spaces)	12 spaces (10 spaces)	0 spaces (Based on Community Need)	Has SRE building (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Wray	Wray Municipal	2V5	Facility with restrooms, flight planning space, Wi-Fi, and rest area (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	6 spaces (18 spaces)	37 spaces (11 spaces)	0 spaces (Based on Community Need)	Has SRE building (Based on community need)	None (Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Yuma	Yuma Municipal	2V6	Facility with restroom and pilot lounge (Facility with restrooms, flight planning space, Wi-Fi, and rest area)	2 spaces (9 spaces)	16 spaces (6 spaces)	0 spaces (Based on Community Need)	None (Based on community need)	None (Based on community need)	Partial AOA 3-wire fencing (AOA three-wire fencing with appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
GA-Rural									
Blanca	Blanca	05V	Based on community need	0 spaces (0 spaces)	0 spaces (Based on community need)	0 spaces (Based on community need)	NP (Based on community need)	NP (Based on community need)	None (AOA three-wire fencing with appropriate signage)
Brush	Brush Municipal	7V5	Based on community need	6 spaces (5 spaces)	5 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need)	None Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
Center	Leach	1V8	Yes	5 spaces (4 spaces)	16 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need))	None Based on community need)	None (AOA three-wire fencing with appropriate signage)
Eads	Eads Municipal	9V7	Based on community need	3 spaces (9 spaces)	9 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need)	None Based on community need)	None (AOA three-wire fencing with appropriate signage)
Haxtun	Haxtun Municipal	17V	Based on community need	1 space (1 space)	2 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need)	None Based on community need)	None (AOA three-wire fencing with appropriate signage)
Holly	Holly	K08	Based on community need	3 spaces (1 space)	5 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need)	None Based on community need)	None (AOA three-wire fencing with appropriate signage)
Julesburg	Julesburg Municipal	7V8	Based on community need	1 space (5 spaces)	5 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need)	None Based on community need)	None (AOA three-wire fencing with appropriate signage)
La Veta	Cuchara Valley	07V	Based on community need	4 spaces (2 spaces)	2 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need))	None Based on community need)	Terminal apron area 3-wire fencing (AOA three-wire fencing with appropriate signage)
Saguache	Saguache Municipal	04V	Based on community need	0 spaces (0 spaces)	0 spaces (Based on community need)	0 spaces (Based on community need)	None (Based on community need)	None Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)

Associated City	Airport Name	FAA ID	Airport Facilities						
			Terminal Capacity	*Apron Tie-Downs	Hangars		Dedicated Maintenance /SRE Building	**Electric Vehicle Charging Station	Perimeter Security
					Based	Transient			
Walden	Walden-Jackson County	33V	Based on community need	3 spaces (3 spaces)	8 spaces (Based on community need)	0 spaces (Based on community need)	NP (Based on community need)	None Based on community need)	AOA 3-wire fencing with appropriate signage (AOA three-wire fencing with appropriate signage)
		System-wide Total	**35**	**38**	**31**		**23**	**2**	**50**

**Note: Apron tie-downs are the total number of existing based and transient paved and grass tie-downs and shade hangars.*
***Note: Airports are considered meeting the objection if they provide at least one electric vehicle charging station.*
Sources: 2018 Inventory & Data Form; Individual Airport Master Plans; Google Earth; ACRP Report 25; ACRP Report 113, 2019

C.6.4. Services/Other Objectives

- Jet A Fuel
- AvGas Fuel
- Aircraft De-Icing
- Courtesy Car
- Sustainability Plan

Table C.15 presents the minimum facility and service objectives for services and other facilities by airport classification. **Table C.16** presents the performance of each airport in meeting the services and other facilities objectives. Existing conditions for each airport are shown above the objective which is enclosed in parentheses. Any existing conditions that do not meet the objective are shown in red text.

Table C.15. Services/Other Objectives by Airport Classification

Objective	Commercial Service	GA-National	GA-Regional	GA-Local	GA-Community	GA-Rural
Services/Other						
Jet A Fuel	Full service	Full service	Full service	24/7 (self-serve or call out)	Based on community need	Based on community need
AvGas Fuel	Full service	Full service	Full service	24/7 (self-serve or call out)	24/7 (self-serve or call out)	Based on community need
Aircraft De-icing	De-icing facilities including fluid collection	De-icing facilities including fluid collection	Dedicated de-icing area	Based on community need	Based on community need	Based on community need
Courtesy Car	Yes	Yes	Yes	Yes	Yes	Based on community need
Sustainability Plan	Yes	Yes	Yes	Based on community need	Based on community need	Based on community need

Source: Kimley-Horn, 2019

Table C.16. Service/Other Facilities Objectives

Associated City	Airport Name	FAA ID	Services/Other				
			Jet A Fuel	AvGas Fuel	Aircraft De-Icing	Courtesy Car	Sustainability Plan
Commercial Service							
Alamosa	San Luis Valley Regional	ALS	Full service (Full service)	Full service (Full service)	De-icing facilities without fluid collection (De-icing facilities including fluid collection)		NP
Aspen	Aspen-Pitkin County	ASE	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	✓
Colorado Springs	Colorado Springs Municipal	COS	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	
Cortez	Cortez Municipal	CEZ	Full service (Full service)	Full service (Full service)	De-icing facilities without fluid collection (De-icing facilities including fluid collection)	✓	
Denver	Denver International	DEN	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	✓
Durango	Durango-La Plata County	DRO	Full service (Full service)	Full service (Full service)	De-icing facilities without fluid collection (De-icing facilities including fluid collection)	✓	
Eagle	Eagle County Regional	EGE	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	✓
Grand Junction	Grand Junction Regional	GJT	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	
Gunnison	Gunnison-Crested Butte Regional	GUC	Full service (Full service)	Full service (Full service)	None (De-icing facilities including fluid collection)	✓	
Hayden	Yampa Valley	HDN	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	

Associated City	Airport Name	FAA ID	Services/Other				
			Jet A Fuel	AvGas Fuel	Aircraft De-Icing	Courtesy Car	Sustainability Plan
Fort Collins/Loveland	Northern Colorado Regional	FNL	Full service (Full service)	Full service (Full service)	De-icing facilities without fluid collection (De-icing facilities including fluid collection)	✓	
Montrose	Montrose Regional	MTJ	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	
Pueblo	Pueblo Memorial	PUB	Full service (Full service)	Full service (Full service)	De-icing facilities without fluid collection (De-icing facilities including fluid collection)	✓	
Telluride	Telluride Regional	TEX	Full service (Full service)	Full service (Full service)	De-icing facilities including fluid collection (De-icing facilities including fluid collection)	✓	
GA-National							
Denver	Centennial	APA	Full service (Full service)	Full service (Full service)	De-icing facilities without fluid collection (De-icing facilities including fluid collection)	✓	✓
Denver	Rocky Mountain Metropolitan	BJC	Full service (Full service)	Full service (Full service)	De-icing facilities without fluid collection (De-icing facilities including fluid collection)	✓	✓
GA-Regional							
Colorado Springs	Meadow Lake	FLY	Not available (Full service)	Full service (Full service)	None (Dedicated de-icing area)		
Denver	Colorado Air and Space Port	CFO	Full service (Full service)	Full service (Full service)	Dedicated de-icing area (Dedicated de-icing area)	✓	
Greeley	Greeley-Weld County	GXY	Full service (Full service)	Full service (Full service)	Dedicated de-icing area (Dedicated de-icing area)	✓	
Longmont	Vance Brand	LMO	Full service (Full service)	Full service (Full service)	None (Dedicated de-icing area)	✓	
Rifle	Rifle Garfield County	RIL	Full service (Full service)	Full service (Full service)	Dedicated de-icing area (Dedicated de-icing area)	✓	✓
GA-Local							
Boulder	Boulder Municipal	BDU	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)

Associated City	Airport Name	FAA ID	Services/Other				
			Jet A Fuel	AvGas Fuel	Aircraft De-Icing	Courtesy Car	Sustainability Plan
Buena Vista	Central Colorado Regional	AEJ	Full service (24/7 self-serve or call out)	Assisted Self-Service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Burlington	Kit Carson County	ITR	24/7 self-serve or call out (24/7 Self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Canon City	Fremont County	1V6	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	Yes (Based on community need)
Craig	Craig-Moffat	CAG	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Del Norte	Astronaut Kent Rominger	RCV	Not available (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Delta	Blake Field	AJZ	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Erie	Erie Municipal	EIK	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Fort Morgan	Fort Morgan Municipal	FMM	Full service (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Glenwood Springs	Glenwood Springs Municipal	GWS	24/7 self-serve or call out (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Kremmling	Mc Elroy Airfield	20V	Full service (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
La Junta	La Junta Municipal	LHX	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Lamar	Lamar Municipal	LAA	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Limon	Limon Municipal	LIC	Not available (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Pagosa Springs	Stevens Field	PSO	24/7 self-serve or call out (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	NP (Based on community need)
Salida	Harriet Alexander Field	ANK	24/7 self-serve or call out (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Steamboat Springs	Steamboat Springs	SBS	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	Yes (Based on community need)

Associated City	Airport Name	FAA ID	Services/Other				
			Jet A Fuel	AvGas Fuel	Aircraft De-Icing	Courtesy Car	Sustainability Plan
Sterling	Sterling Municipal	STK	Full service (24/7 self-serve or call out)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Walsenburg	Spanish Peaks Airfield	4V1	24/7 self-Serve or call out (24/7 self-serve or call out)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
GA-Community							
Akron	Colorado Plains Regional	AKO	Full service (Based on community need)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Creede	Mineral County Memorial	C24	24/7 (Self-Serve or Call Out) (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Granby	Granby-Grand County	GNB	24/7 (Self-Serve or Call Out) (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Holyoke	Holyoke	HEQ	24/7 (Self-Serve or Call Out) (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Las Animas	Las Animas-Bent County	7V9	Not available (Based on community need)	Not available (24/7 self-serve or call out)	None (Based on community need)		None (Based on community need)
Leadville	Lake County	LXV	24/7 (Self-Serve or Call Out) (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	Yes (Based on community need)
Meeker	Meeker/Coulter Field	EEO	24/7 (Self-Serve or Call Out) (Based on community need)	Full service (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Monte Vista	Monte Vista Municipal	MVI	24/7 (Self-Serve or Call Out) (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)		None (Based on community need)
Nucla	Hopkins Field	AIB	24/7 (Self-Serve or Call Out) (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)

Associated City	Airport Name	FAA ID	Services/Other				
			Jet A Fuel	AvGas Fuel	Aircraft De-Icing	Courtesy Car	Sustainability Plan
Paonia	North Fork Valley	7V2	Not available (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Rangely	Rangely	4V0	Not available (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Springfield	Springfield Municipal	8V7	Not available (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Trinidad	Perry Stokes	TAD	24/7 (Self-Serve or Call Out) (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)		None (Based on community need)
Westcliffe	Silver West	C08	Not available (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)		None (Based on community need)
Wray	Wray Municipal	2V5	Not available (Based on community need)	24/7 self-serve or call out (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
Yuma	Yuma Municipal	2V6	Not available (Based on community need)	Not available (24/7 self-serve or call out)	None (Based on community need)	✓	None (Based on community need)
GA-Rural							
Blanca	Blanca	05V	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	None (Based on community need)	NP (Based on community need)
Brush	Brush Municipal	7V5	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	Yes (Based on community need)	None (Based on community need)
Center	Leach	1V8	Not available (Based on community need)	24/7 (Self-Serve or Call Out) (Based on community need)	None (Based on community need)	None (Based on community need)	None (Based on community need)
Eads	Eads Municipal	9V7	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	Yes (Based on community need)	None (Based on community need)

Associated City	Airport Name	FAA ID	Services/Other				
			Jet A Fuel	AvGas Fuel	Aircraft De-Icing	Courtesy Car	Sustainability Plan
Haxtun	Haxtun Municipal	17V	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	Yes (Based on community need)	None (Based on community need)
Holly	Holly	K08	Not available (Based on community need)	24/7 (Self-Serve or Call Out) (Based on community need)	None (Based on community need)	None (Based on community need)	None (Based on community need)
Julesburg	Julesburg Municipal	7V8	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	Yes (Based on community need)	None (Based on community need)
La Veta	Cuchara Valley	07V	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	Yes (Based on community need)	None (Based on community need)
Saguache	Saguache Municipal	04V	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	No (Based on community need)	None (Based on community need)
Walden	Walden-Jackson County	33V	Not available (Based on community need)	Not available (Based on community need)	None (Based on community need)	Yes (Based on community need)	None (Based on community need)
		System-wide Total	**37**	**54**	**11**	**50**	**7**

Sources: FAA 5010 Master Record; 2018 Inventory & Data Form, 2019