



COLORADO

MOUNTAIN AIRPORT STUDY



SEPTEMBER 2010

THE MOUNTAIN AIRPORTS

Through coordination with the Federal Aviation Administration (FAA), the Colorado Department of Transportation – Division of Aeronautics (CDOT) conducted an update of the 2003 Colorado Mountain Airport Study. The 2010 Colorado Mountain Airport Study updates and expands on the unique aspects and challenges that Colorado mountain airports face. Over the last 7 years, the Colorado Mountain Airport System (CMAS) continued to grow and prosper, and it is important to demonstrate the value that these 14 airports provide to both the State and FAA in terms of investment.

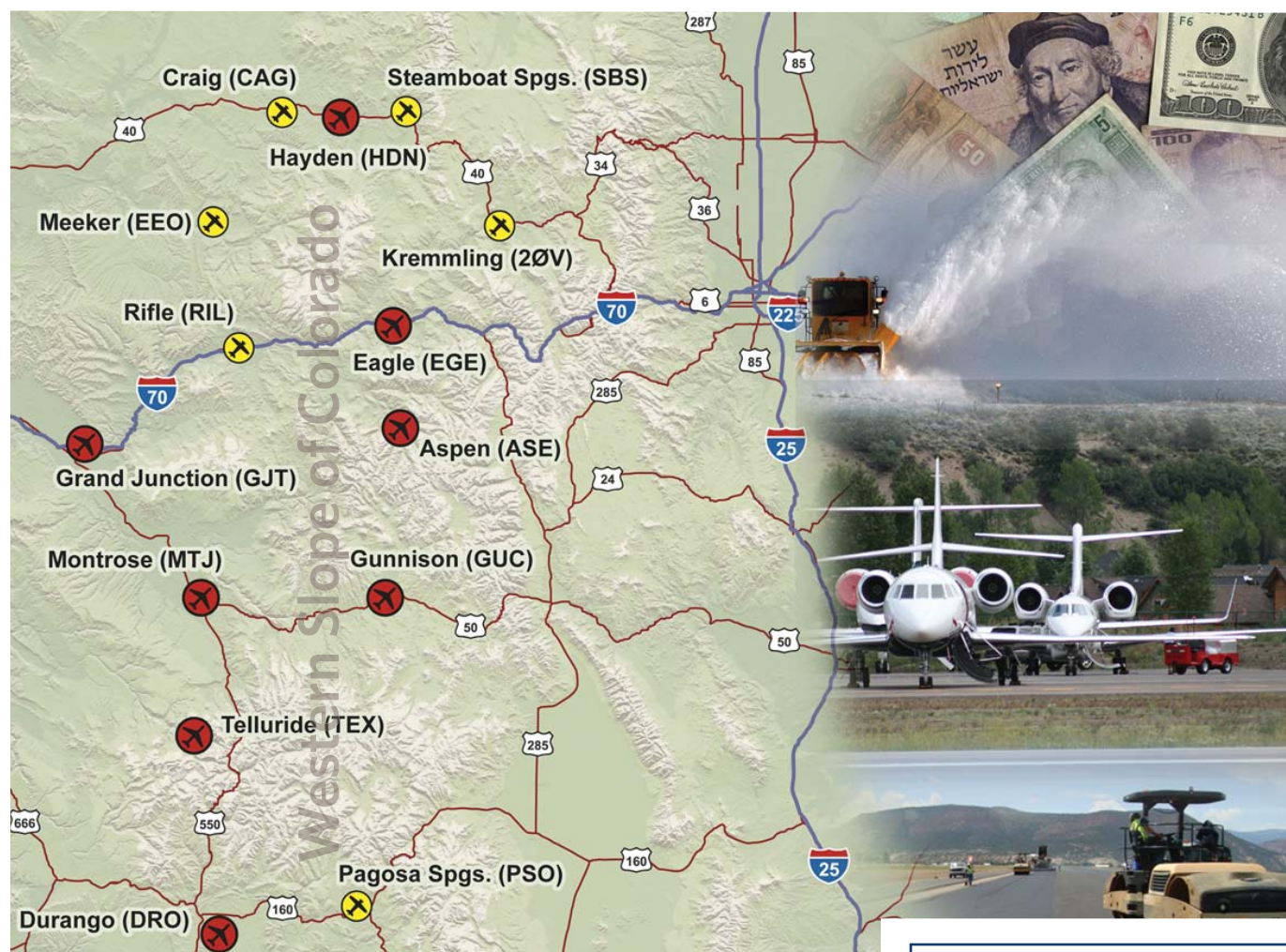
The CMAS is comprised of 8 commercial service and 6 general aviation airports, and is used by a wide variety of aviation users. The fleet mix at the commercial service airports ranges from single-engine piston general aviation to large corporate jet aircraft to Boeing 757 and Airbus jet service. The fleet mix at the general aviation CMAS airports includes single, multi-engine piston and turboprop aircraft, and large corporate jets.

The CMAS airports are located along Colorado's Western Slope, which is defined as the region on the west side of the Continental Divide in Colorado. Due to growing population and expanding economic opportunities, many towns on the Western Slope are growing at a significant rate.

In many areas throughout the Western Slope, local airports, many of the study airports in particular, have been a key component in facilitating growth and economic development. Additionally, many of the CMAS airports are located in resort/destination communities and often times, owners of vacation homes and hobby ranches in such communities take advantage of the close and convenient access to their property by using general aviation aircraft. On any given holiday weekend, nearly 1/10 of the nation's business jets can be found in Colorado.

The physical location of many of the CMAS airports also results in an extreme operating environment for both airport and aircraft operators when compared to airports in non-mountainous environments. Impacts of this extreme operating environment on both airports and aircraft include: significant and localized weather such as snow and severe thunderstorms; high density altitude; higher construction and maintenance costs; physical facility constraints due to terrain that leads to a lack of apron space; and the inability to accommodate longer runway lengths.

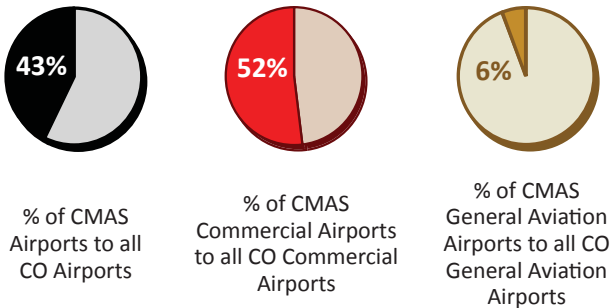
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ECONOMIC IMPACT

CDOT's Division of Aeronautics published an update to the Colorado Airports Economic Impact Study in 2008 that identified the economic impacts for 14 commercial airports (including Denver International) and 60 general aviation airports. These 74 airports are responsible for generating billions of dollars in economic benefit and support hundreds of thousands of jobs. The 14 airports (8 commercial service and 6 general aviation) included in the CMAS and located on Colorado's Western Slope are vital cogs in the network of airports within the State. When these airports are compared to the system, it becomes quite clear how important the mountain airports are to Colorado's economy as they account for 43 percent, of the total economic output for the entire State (excluding Denver International Airport).

Total Economic Output*



**2008 Colorado Airport Economic Impact Study (excluding Denver International Airport)*

Businesses throughout the U.S. and Colorado depend on general aviation aircraft to add to their productivity and efficiency. The 14 mountain airports located on Colorado's Western Slope are essential to this economic progress. The region would be severely hampered in its ability to participate in an increasingly global marketplace without these airports. Increasing numbers of businesses throughout the nation are looking to general aviation aircraft, with their flexibility and efficiency, to support their domestic and international business operations. Tourism is also an important driver in the Western Slope's economy. Many vacationers and second homeowners rely on general aviation corporate jets to reach the pristine resort areas on the Western Slope.

The FAA compiles and publishes flight plan data for both commercial service and general aviation aircraft flying under instrument flight rules (IFR). In evaluating the IFR data for the CMAS airports over a 12 month period, several interesting facts reveal themselves:

- 37 Fortune 500 companies used at least one of the CMAS airports
- Oil & gas exploration, investment, development, retail, banking companies are using CMAS airports
- Of the companies using the CMAS airports, the number of aircraft operations ranges from 2 to several hundred
- 81% of completed flight plans were made by jet aircraft



Oil & Gas Industry Impacts

In addition to the general business activity that was analyzed and quantified at the CMAS airports, the impacts of a very specific segment of industry were examined. The oil and gas sector, along with the overall energy industry are important players in the dynamics of mountain airport usage on the Western Slope. CMAS airports serve as a critical link to energy companies' operations in Colorado. The Colorado mountain airports are critical to our business of producing energy because they provide the following:

- Efficient access to Colorado's vast energy resources on the Western Slope
- Quick access to power plants for maintenance and repair
- Corporate executive access for meetings
- Access to field crews and engineers

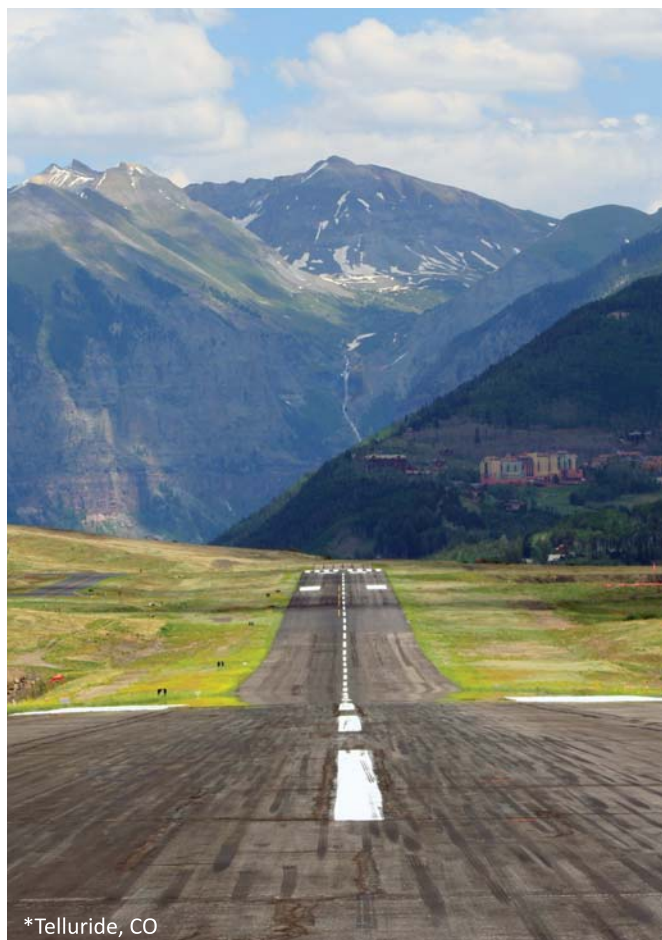


*Aspen, CO

OPERATING IN AN EXTREME ENVIRONMENT

The climate of the State of Colorado and the region is greatly impacted by mountains. Colorado's "high country" ranges in elevation from approximately 7,000 feet in lower mountain valleys to over 14,000 feet at the top of its highest peaks. Scattered throughout Colorado's mountains are the CMAS airports. The varying degrees of the Colorado mountainous environment result in significant disparities in weather patterns including temperature, precipitation, humidity and wind. Regardless of location or elevation, weather patterns commonly affect the airports and aircraft operators using CMAS airports.

High elevations of the mountain airports combined with even moderate temperatures, especially in the summer, result in high density altitude. High density altitude results in less dense air which decreases aircraft lift and engine performance, two very significant considerations while operating an aircraft in constrained, higher terrain. Another common weather element affecting aircraft and airports in the mountains is wind. In constrained mountain environments, single runway configurations are common and are aligned as space allows. Sometimes strong crosswinds make flying into these runways challenging or, on occasion, prevents access all together. Colorado's mountains generate wide arrays of precipitation, whether it is heavy rain, hail, or snow. Precipitation at CMAS airports can create challenging operating situations for airports and aircraft operators.



*Telluride, CO

Not only do airport operators have to worry about extreme weather, they also have to face the reality of the additional costs associated with being located in the mountain environment of Colorado's Western Slope. CMAS airports have unique and higher construction costs for the following reasons:

- Located in either resort or remote areas
- Availability of aggregate sources is limited
- Limitations due to a single runway configuration
- Shorter construction season due to cooler temperatures and a longer snow season
- Higher maintenance costs due to high elevations and freeze/thaw cycles

NEXTGEN IMPACTS

FAA's NextGen program represents an evolution from a ground-based system of air traffic control to a satellite-based system of air traffic management and CMAS airports are some of the most ideal candidates to demonstrate the benefits of NextGen. With periods of high demand from large corporate and commercial service aircraft in difficult operating conditions that have been identified through this study, NextGen technologies offer significant opportunities for CMAS airports. These include cost effective surveillance and improved RNP/RNAV approaches which provide a significant airspace and airport capacity increase to Colorado mountain airports while also enhancing safety. CMAS airports are ideal candidates for future NextGen technologies such as blended airspace management due to the seasonal demand and high end fleet of business and commercial aircraft.

SUMMARY

The CMAS represents a vital economic and transportation link to Colorado's citizens and the outside world. As demonstrated in this study, the aircraft fleet mix, its significant local and statewide economic impact, and the extreme operating environment for both the airports and aircraft operators alike, results in a combination that makes the Colorado Mountain Airport System truly one-of-a-kind. While substantial capital investment in new NEXTGEN technologies and improved infrastructure has resulted in significant improvements to the system in recent years, much work remains. Continued investment by the State of Colorado and FAA will be critical to ensure the future growth and success of the system.

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