COLORADO 2011 AVIATION SYSTEM PLAN

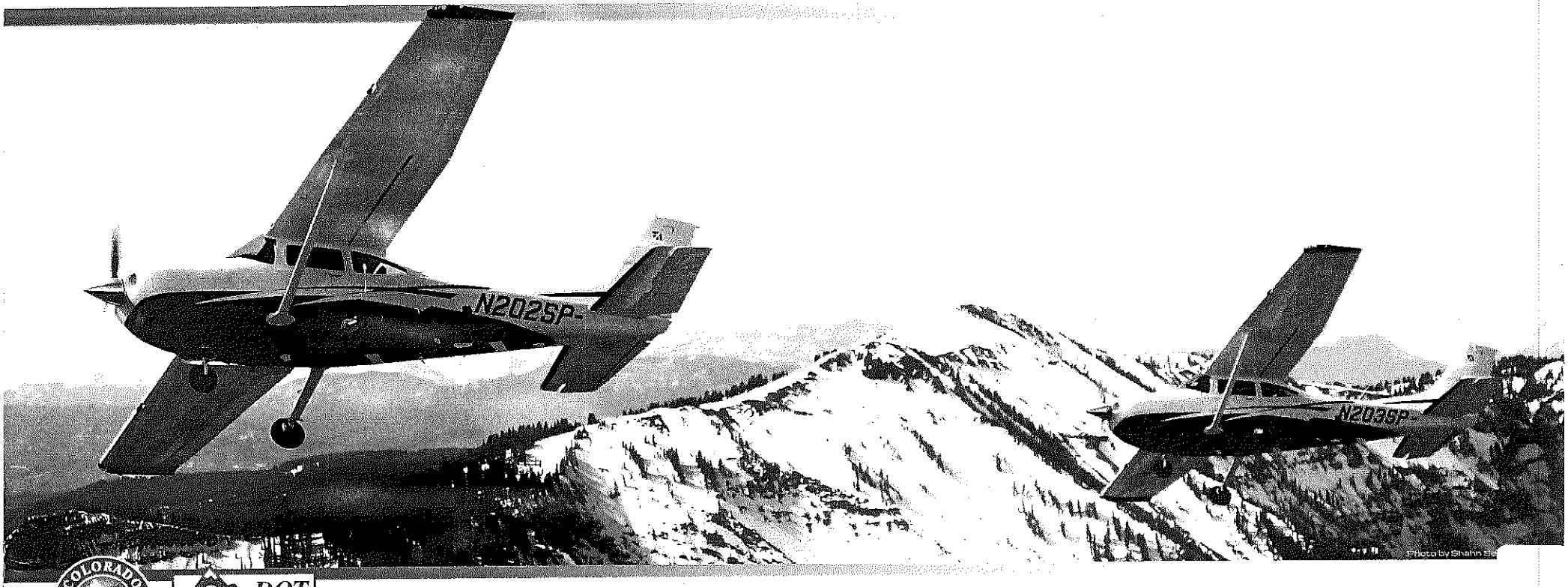


Photo by Shahn S

COLORADO AERONAUTICS DIVISION

DOT DEPARTMENT OF TRANSPORTATION

EXECUTIVE SUMMAR

Attachment F

INTRODUCTION

Under the direction of the Colorado Department of Transportation (CDOT), Division of Aeronautics, Colorado was among the first states to prepare a performance-based aviation system plan. The plan helps to identify a system of airports and projects that meets the State's air transportation needs and supports its economic goals. The state aviation system plan also provides the Division of Aeronautics with an important planning tool to monitor how investment elevates overall system performance.

Building on the 2000 and 2005 state aviation system plans, the 2011 Colorado Aviation System Plan Update has three primary objectives:

- **Use previously established performance measures and benchmarks to provide an update on how well the system is currently performing.**
- **Use information on system performance in 2000 and 2005 to identify 2011 changes in system performance.**
- **Use historic information to define the relationship between system performance measures, benchmarks, and facility/service objectives and aviation grants issued by the Division of Aeronautics.**

The process to evaluate the airport system's performance results in a report card for the system. System performance measures are the categories in which the system is graded or evaluated, and individual benchmarks are the actual tests used to determine how well the system is performing. The system performance measures are commensurate with Federal Aviation Administration (FAA) descriptors for a balanced and viable airport system.

Performance Measures

Activity

The system should have sufficient capacity to meet current and future needs.

Expansion Potential

The system should have the ability to respond to unforeseen changes in the aviation industry from a demand and technological standpoint or in the local market area.

Economic Support

The system should provide support to the economy.

Coverage & Emergency Access

The system should be accessible for customers and users from both the ground and the air.

Investment

The system should be developed to leverage historic investment and to make the most out of future investment.

Security

The system should be operated to address security and safety considerations, relative to perceived risks.

THE COLORADO AIRPORT SYSTEM

All airports in the Colorado system are assigned to one of three roles: Major, Intermediate, or Minor. Roles were initially assigned in 2000, but adjusted in 2005 and again in 2011 to reflect changes in the system and the aviation industry. Airport roles generally reflect the relative importance of the airport to the system and provide a backdrop for the system evaluation. As the system is evaluated, it is important to know which airports are privately versus publicly-owned and which airports are included in the National Plan of Integrated Airport Systems (NPIAS); Colorado airports included in the NPIAS are eligible for Federal funding from the FAA.

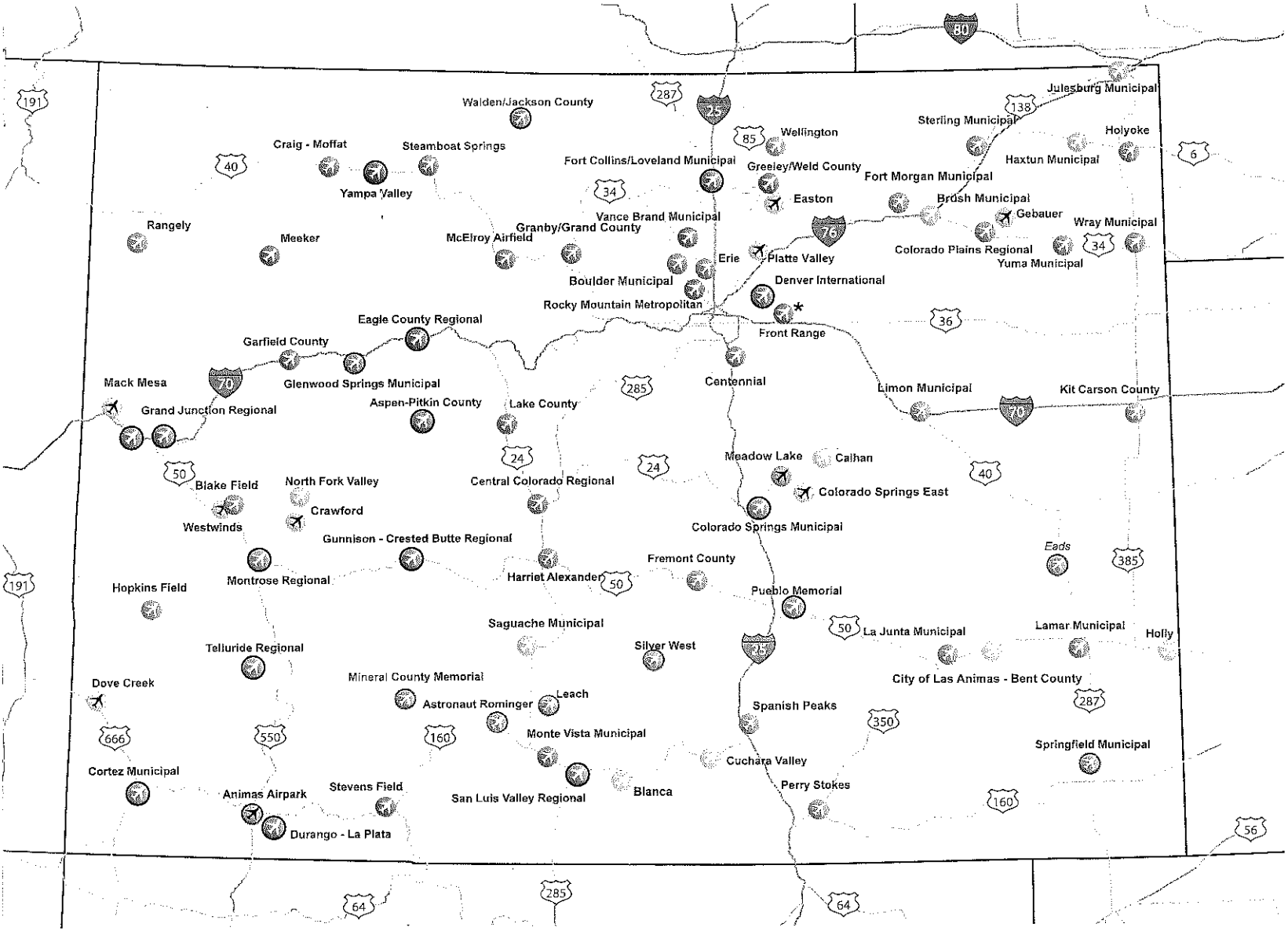
Using the framework established during this update to the Colorado Aviation System Plan, the plan shows how individual grants issued by the Division of Aeronautics relate to and help to support the broader measures that are used to evaluate and monitor the performance of Colorado's airport system. The system plan provides information on the following:

- **Actions and projects desirable to improve system performance relative to the plan's benchmarks.**
- **Actions and projects desirable to improve system performance relative to airport-specific facility, service, and equipment objectives.**
- **Generalized cost estimates related to implementing improvements identified in the update.**

The remainder of this document summarizes results from Colorado's 2011 Aviation System Plan Update.

Lake County Airport - Leadville, CO. Photo by Shahn Sederberg

THE COLORADO AIRPORT SYSTEM



LEGEND

- Major Commercial Service
- Major General Aviation
- Intermediate
- Minor (Non-NPIAS)
- New NPIAS General Aviation
- Non-NPIAS Intermediate Airport
- Privately Owned

*Spaceport Colorado

Performance Measure: ACTIVITY

For airports in Colorado to effectively serve their customers, they should have adequate operational capacity. The system plan benchmarked the annual operational capacity of each airport to current and future total annual aircraft landings and takeoffs. This was accomplished using each airport's annual service volume (ASV). ASV reflects the ability of each airport's runway and taxiway system to accommodate annual operational demand; an ASV for each system airport was estimated using accepted FAA guidance. Projections of aviation demand were developed to support activity benchmarking. Activity recorded in 2005 and 2010 was a major building block to develop projections for various demand components. The critical component considered in the demand/capacity analysis was each airport's total annual operational estimate.

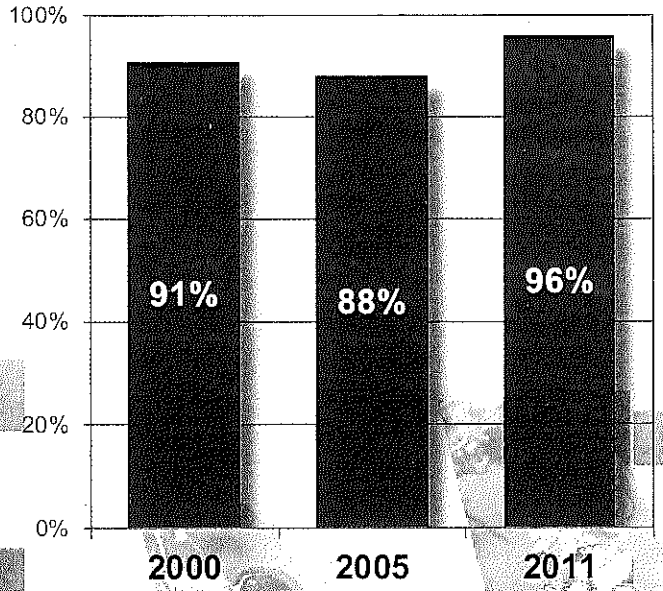
As information presented here indicates, while commercial aircraft operations at Denver International increased between 2005 and 2010, statewide operations in all other categories declined. In particular, Colorado experienced a decrease in general aviation operations. This was a national trend which was not specific to Colorado. At some non-towered airports, this reported decrease may have been a result of better estimates of activity and not actual declines in demand, but even at the system's largest general aviation airports that have air traffic control towers, decreases in general aviation demand were reported.

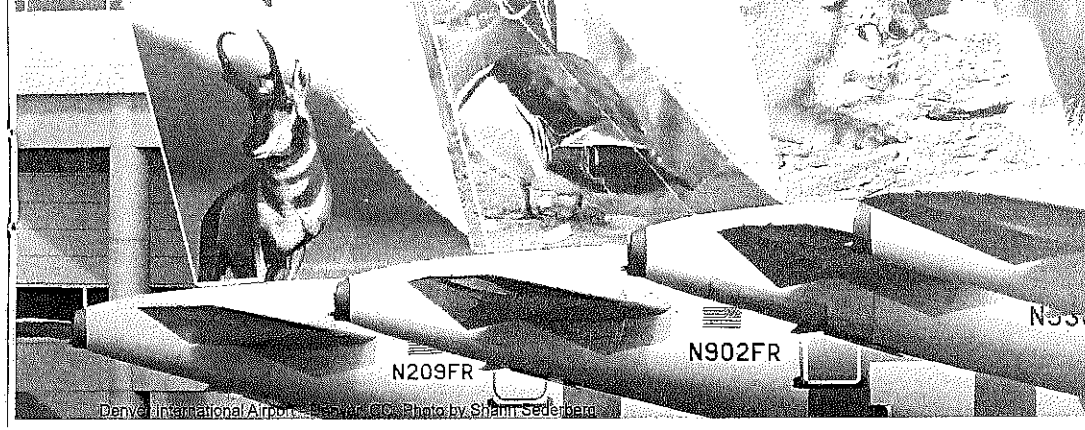
Colorado Airport Demand Projections

	2005	2010	2015	2020	2030
Enplanements					
Denver International	21,701,980	26,024,920	28,877,700	33,153,400	42,270,200
Other Commercial Airports	2,015,010	1,998,140	2,191,400	2,504,900	3,176,700
Total	**23,716,990**	**28,023,060**	**31,069,100**	**35,658,300**	**45,446,900**
Commercial Operations					
Denver International	527,160	608,060	654,730	730,000	880,600
Other Commercial Airports	95,250	83,680	88,550	95,860	110,970
Total	**622,410**	**691,740**	**743,280**	**825,860**	**991,570**
General Aviation/Other Ops.					
Denver International	40,390	27,380	27,800	30,450	37,560
All Other System Airports	1,998,220	1,712,340	1,792,540	1,861,040	2,036,570
Total	**2,038,610**	**1,739,720**	**1,820,340**	**1,891,490**	**2,074,130**
Total Annual Operations					
Denver International	567,550	635,440	682,530	760,450	918,160
All Other System Airports	2,093,470	1,796,020	1,881,090	1,956,900	2,147,540
Total	**2,661,020**	**2,431,460**	**2,563,620**	**2,717,350**	**3,065,700**
Based Aircraft					
All System Airports	5,359	5,245	5,351	5,470	5,756

Performance Measure: ACTIVITY

Percent of Major Airports Projected to Operate Under 80% Capacity





Denver International Airport - Denver, CO. Photo by Shahn Sederberg

The FAA recommends that when annual demand saturates 80 percent of an airport's ASV, steps should be taken to address operational capacity shortfalls. The system plan includes a target to have all airports operating under an 80 percent demand/capacity ratio. No airports in the Intermediate or Minor categories reached critical demand/capacity thresholds in 2000, 2005, or 2011.

Decreases in annual operations, along with capacity enhancing projects at Centennial and Pueblo Memorial, resulted in fewer airports reaching critical demand/capacity thresholds than did in previous reporting periods. Based on its current ASV, Denver International is the only airport expected to exceed the 80 percent demand/capacity ratio by 2030. In recognition of the need to enhance its operational capacity, Denver International is currently in the process to plan and determine the actual timing for building its seventh runway. This project will provide a significant increase to the airport's operating capacity.

In 2000, nine percent of the airports in the Major category were expected to exceed an 80 percent demand/capacity ratio by the end of the planning period, and this increased to 12 percent by 2005. In 2011, with lower activity levels projected by the end of the planning period and other noted increases in operational capacity, only four percent (or one airport) of the airports in the Major category are expected to reach or exceed the critical 80 percent demand/capacity threshold. This airport, as noted, is Denver International.

It is also important to note that the Division of Aeronautics and FAA investment in Phases I and II of the Colorado Surveillance Project has or will increase operational capacity especially during instrument flight rule conditions. Airports that have benefitted from the surveillance project include those serving Rifle, Craig, Hayden, Steamboat, Gunnison, Telluride, Durango, and Montrose.

Performance Measure: EXPANSION POTENTIAL

An important part of the mission for the Division of Aeronautics is to help system airports expand to meet the needs of their users. There are many types of projects related to expansion needs that are funded annually by the Division of Aeronauitcs. To put themselves in the best position to expand, system airports should have current master plans. Airports should also have current Part 77 surfaces and compatible land use planning in place which identify the areas around each airport that need to be protected from height obstructions and from activities that might interfere with the safety of aircraft operations. In addition to identifying their Part 77 surfaces, airports in Colorado should also take steps to have these surfaces incorporated into local planning documents and zoning ordinances. Once Part 77 surfaces are in place, the Division of Aeronautics is often called upon to help address height related obstructions in these areas.

Benchmarks related to current master plans and Part 77 surfaces have been incorporated into the system plan to help evaluate system performance relative to expansion needs. These benchmarks were also used in the 2000 and the 2005 system plans.

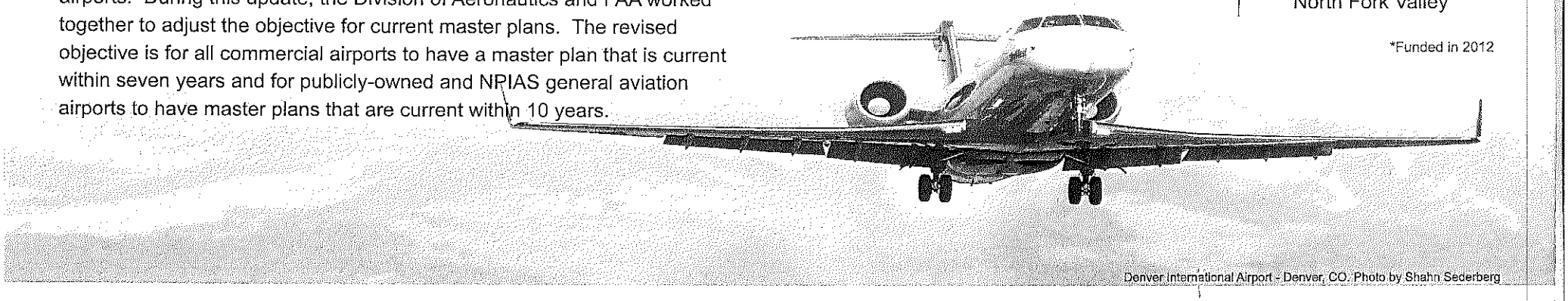
The master planning benchmark applies to publicly-owned and NPIAS airports. During this update, the Division of Aeronautics and FAA worked together to adjust the objective for current master plans. The revised objective is for all commercial airports to have a master plan that is current within seven years and for publicly-owned and NPIAS general aviation airports to have master plans that are current within 10 years.

The currency of master plans will change continually over the planning period; a target has been established to have 70 percent of applicable airports with current master plans in any reporting period. Between now and 2030, applicable system airports will need one or more master plan updates to meet the system plan objectives. Airports that currently need a master plan to meet objectives set in the system plan are shown here. It is worth noting that some of these airports report that they are actually planning to undertake master plans in the near term.

Airports Needing a Master Plan to Meet Objectives

Major Airports	Intermediate Airports	Minor Airports
Yampa Valley Regional	Leach Airport	Brush Municipal*
Telluride Regional	Eads Airport	Haxtun Municipal
	Glenwood Spings	Holly Airport
	Springfield Municipal	Julesburg Municipal
	Silver West	Cuchara Valley
		La Animas City & County
		North Fork Valley

*Funded in 2012



Denver International Airport - Denver, CO. Photo by Shahn Sederberg

Performance Measure: EXPANSION POTENTIAL

Airports with Current Master Plans

	2000	2005	2011
Major Airports	88%	92%	92%
Intermediate Airports	53%	87%	84%
Minor Airports	9%	22%	30%
Applicable System Airports	58%	80%	79%

Airports with Part 77 Compliance

	2000	2005	2011
Major Airports	54%	92%	73%
Intermediate Airports	23%	61%	61%
Minor Airports	0%	11%	25%
Applicable System Airports	31%	66%	69%

To meet the Part 77 benchmark, airports had to report that current Part 77 surfaces are recognized within the planning documents of surrounding communities. In 2011, fewer Major Airports report that they meet the Part 77 benchmark than did in 2005. In addition to helping airports address Part 77 obstructions, it is recommended that the Division of Aeronautics undertake a focused effort to address the lack of compliance with the Part 77 benchmark at all applicable airports. Major and Intermediate Airports, included in the NPIAS, reporting they do not meet the Part 77 benchmark, are shown here.

Airports Not Meeting Part 77 Benchmark

Major Airports	Intermediate Airports
Colorado Springs	Meadow Lake
Durango-La Plata County	Blake Field
Eagle County Regional	Erie Municipal
Lamar Municipal	Fort Morgan Municipal
Pueblo Municipal	McElroy Field
Garfield County Regional	Rangely
	Harriet Alexander
	Sterling Municipal
	Perry Stokes

Performance Measure: ECONOMIC SUPPORT

For airports in Colorado to effectively support both the State and local economies, they must be accessible and have various support services. For airports to be accessible from the air, the system plan has adopted an objective for Major Airports to have a precision approach or an approach with vertical guidance and for airports in the Intermediate category to have a non-precision approach. With evolving satellite technology, options for airports to have a published approach are more diverse. However, there are other requirements that airports must also meet before an approach can be approved; it is these additional requirements that occasionally prohibit an airport from having a published approach.

The incorporation of the vertical approach objective is new to this 2011 update of the system plan. Airports in the Major category, both commercial and general aviation, that should continue to be considered for an approach with vertical guidance are shown below. Intermediate Airports that lack a published approach are shown separately.

Airports Needing Vertical Guidance Approach

Major Airports: Commercial & General Aviation

Aspen-Pitkin County

Eagle County

Vance Brand Municipal

Meeker Airport

Stevens Field

Telluride Regional

Intermediate Airports Needing Published Approach

Boulder Municipal

Leach Field*

Meadow Lake

Mineral County*

Astronaut Kent Rominger*

Blake Field

Animas Airpark*

Eads*

Ft. Morgan Municipal (pending)

Glenwood Springs Municipal*

Granby-Grand County

Limon Municipal

Rangely

Spanish Peaks Airfield (pending)

Silver West*

Yuma Municipal

*Non-NPIAS Airports

Further investigation by the FAA is needed to determine which approaches can actually be implemented. As information in this sections shows, the percentage of system airports with a published approach increased between the 2005 and the 2011 reporting periods.

Published Approaches in Colorado

	2000	2005	2011
Major Airports	96%	96%	100%
Intermediate Airports	39%	39%	50%
All NPIAS Airports	63%	63%	82%

Grand County Airport - Granby, CO. Photo by Shahn Sederberg

Performance Measure: ECONOMIC SUPPORT

Other services which help each airport to support both the statewide and local economies include access to fuel and ground transportation services. Colorado's last statewide economic impact study, released in 2008, showed that aviation contributes over $32 billion each year to the State's economy. When customers have access to fuel and to ground transportation services, the role that airports play in supporting the economy is increased. Ground transportation is especially important to the millions of visitors who reach Colorado each year by air. The system plan has established objectives for all airports in the Major and Intermediate categories to have access to fuel and ground transportation services.

As indicated, system performance related to airports with fuel has improved. However, the percent of system airports in the Intermediate category that have access to ground transportation services for their customers has actually declined. Information on airports in the Intermediate category that need fuel and access to ground transportation services for their customers are shown here.

Intermediate Airports Needing Improved Services

Fuel Service	Ground Transportation
Mineral County Memorial	Leach Airport
Astronaut Rominger Airport	Mineral County Memorial
Eads Airport	Astronaut Rominger Airport
Springfield Municipal	Eads Airport
	Limon Municipal
	Monte Vista Municipal
	Rangely Airport
	Springfield Municipal
	Silver West Airport
	Yuma Municipal

Airports With Fuel Service

	2000	2005	2011
Major Airports	100%	100%	100%
Intermediate Airports	85%	84%	88%

Airports With Ground Transportation Services

	2000	2005	2011
Major Airports	100%	96%	100%
Intermediate Airports	79%	72%	69%

McElroy Field - Kremmling, CO. Photo by Shahn Sederberg

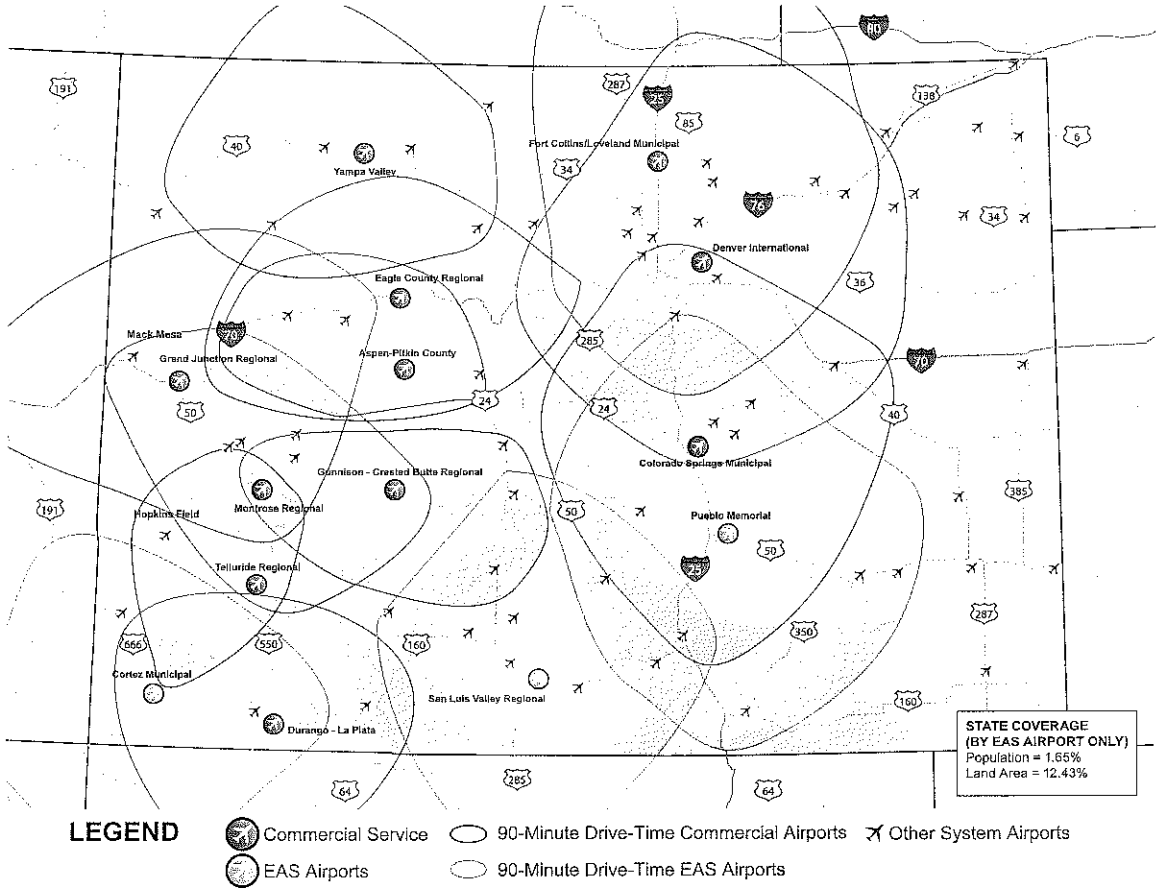
Performance Measure: COVERAGE/EMERGENCY ACCESS

For Colorado to have an effective airport system, the system must be accessible from the ground and from the air. In addition, given its topography and the distribution of its population, it is also essential for airports in Colorado to support the needs of emergency aircraft.

GIS analysis completed in the system plan shows that 94 percent of Colorado's population is within 30 minutes or less of any system airport, and 99 percent of the State's population is within 90 minutes or less of an airport with scheduled commercial airline service. This includes commercial airports in Colorado as well as commercial airports in neighboring states. With the exception of Eastern Colorado, almost all of the remainder of the State is within a 90-minute drive time of one or more commercial airports. Residents in this area of the State most often use Denver International, Colorado Springs Municipal, or Pueblo Memorial for their commercial air travel needs.

It is worth noting that there are airports that help meet Colorado's commercial air travel needs with service supported by operating subsidies from the Essential Air Service (EAS) program. The Division of Aeronautics should monitor the status of this program for the following reasons: future re-authorizations of the Airport Improvement Program (AIP) may not include funding for this program; future changes in EAS program eligibility could impact some airports in Colorado; and the number of carriers participating in this program and the aircraft equipment types suited to EAS routes are dwindling. Loss of commercial airline service at EAS airports would have a greater impact on land area as opposed to population within a 90-minute drive of a commercial service airport.

Service Areas of Commercial Airports in Colorado



Performance Measure: COVERAGE/EMERGENCY ACCESS

An important aspect of accessibility for Colorado's airports relates to weather reporting equipment. The system plan's objective is for all airports in the Major and Intermediate categories to have on-site weather reporting equipment. Investing to meet the objectives for weather reporting equipment has been important to the Division of Aeronautics, and the system has improved accordingly. There are, however, nine airports in the Intermediate category that still need weather reporting equipment in order for the system to be fully compliant with the weather reporting objective.

The number of airports with weather reporting improved as did the percent of land area and population within 25 nautical miles of an airport with weather reporting. The Division of Aeronautics recently issued a grant to provide weather reporting equipment for Astronaut Rominger Airport.

Intermediate Airports Needing On-Site Weather Reporting Equipment

Leach Airport	**Monte Vista Municipal**
Mineral County	**Springfield Municipal**
Astronaut Rominger	**Spanish Peaks Airfield**
Animas Airpark	**Silver West Airport**
Eads Airport	**Yuma Municipal**

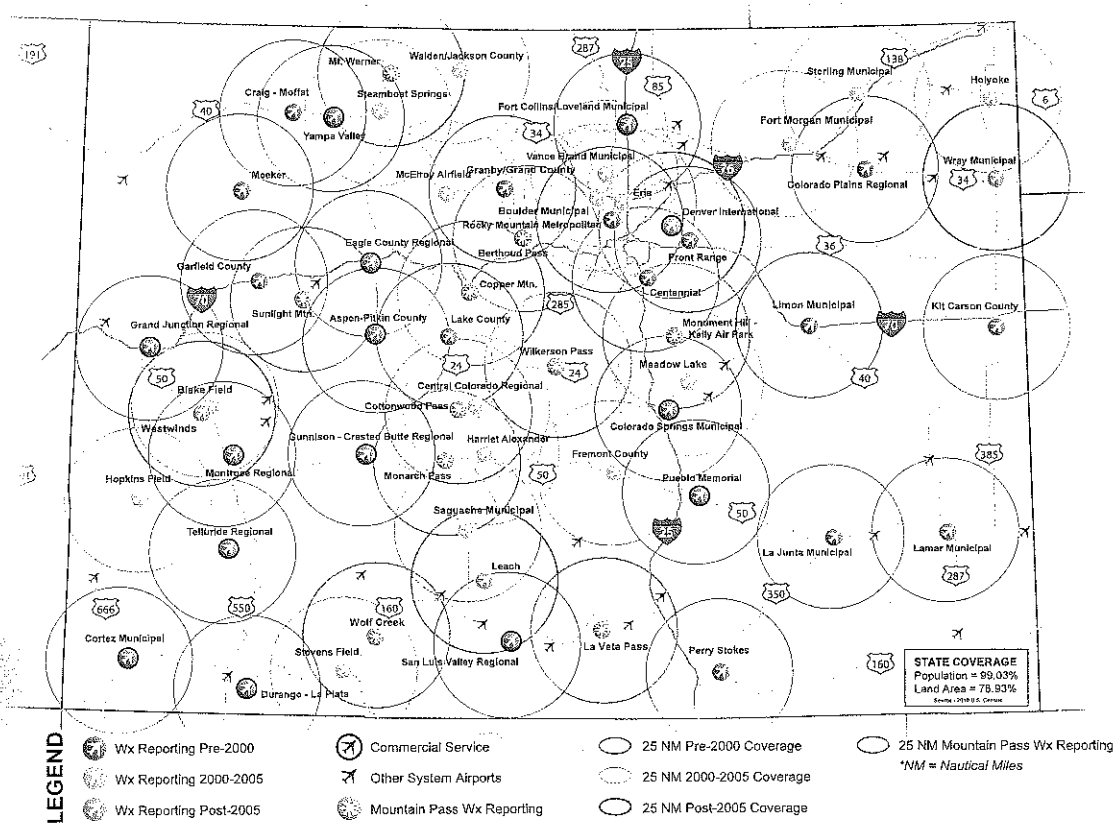
Airports with Weather Reporting Equipment

	2000	2005	2011
Major Airports	92%	100%	100%
Intermediate Airports	24%	63%	69%
Major / Intermediate Airports	52%	79%	83%

Area and Population within 25 Nautical Miles of Weather Reporting Equipment

	2000	2005	2011
Population	94%	99%	99%
Land Area	53%	76%	79%

Coverage Provided by Weather Reporting Facilities Since 2000



McElroy Field - Kremmling, CO. Photo by Shahn Sederberg

Performance Measure: COVERAGE/EMERGENCY ACCESS

There are two types of aircraft that are most often used to support both patient and physician emergency transport needs in Colorado, the King Air B200 and Learjet 35. Operators of these aircraft provided input to the system plan to identify minimum operating requirements for these aircraft; these include a minimum runway length based on the aircraft type and the elevation of the airport, a published approach, weather reporting equipment, HIRL or MIRL, and a rotating beacon.

Emergency operators of the Learjet 35 have requirements similar to those of the King Air B200 emergency aircraft, but this aircraft has a longer minimum runway length requirement. There are only two airports in the Major category that do not meet the minimum runway length for the Learjet 35. The runway at the Meeker Airport is approximately 300 feet short of the objective and the runway at Vance Brand Municipal is approximately 1,600 feet less than the minimum objective for the Learjet 35. All other Major Airports meet all minimum operating requirements for the Learjet 35 emergency aircraft. There are also four Intermediate Airports that meet all minimum operating requirements for the Learjet 35; these airports are Colorado Plains Regional Airport, Central Colorado Regional Airport, La Junta Municipal Airport, and Harriet Alexander Airport.

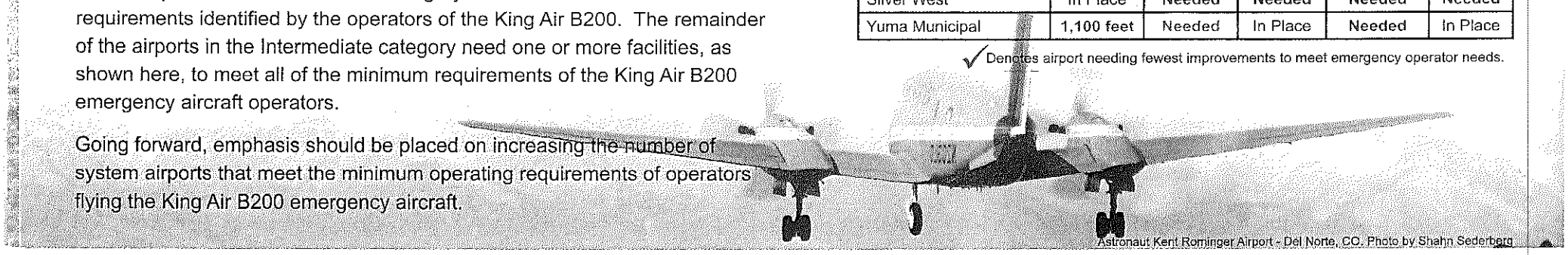
All Major Airports currently have all facilities in place to meet the minimum requirements of emergency operators flying the King Air B200. There are 14 airports in the Intermediate category that also meet all minimum requirements identified by the operators of the King Air B200. The remainder of the airports in the Intermediate category need one or more facilities, as shown here, to meet all of the minimum requirements of the King Air B200 emergency aircraft operators.

Going forward, emphasis should be placed on increasing the number of system airports that meet the minimum operating requirements of operators flying the King Air B200 emergency aircraft.

Facility Needs for King Air Emergency Aircraft Operators

	Airport	Runway Length	Approach	Runway Lighting	Weather Reporting	Rotating Beacon
	Boulder Municipal	900 feet	Needed	In Place	In Place	In Place
	Leach Airport	In Place	Needed	Needed	Needed	In Place
✓	Meadow Lake	In Place	Needed	In Place	In Place	In Place
	Mineral County	In Place	Needed	Needed	Needed	Needed
✓	Blake Field	In Place	Needed	In Place	In Place	In Place
	Astronaut Rominger	In Place	Needed	Needed	Needed	Needed
	Animas Airpark	290 feet	Needed	Needed	Needed	Needed
	Eads Airport	740 feet	Needed	Needed	Needed	Needed
✓	Erie Municipal	100 feet	In Place	In Place	In Place	In Place
✓	Fort Morgan	In Place	Pending	In Place	In Place	In Place
	Glenwood Springs	2,000 feet	Needed	Needed	Needed	Needed
✓	Granby-Grand County	300 feet	Needed	In Place	In Place	In Place
✓	Limon Municipal	100 feet	Needed	In Place	In Place	In Place
✓	Monte Visa Municipal	In Place	In Place	In Place	Needed	In Place
✓	Hopkins Field	700 feet	In Place	In Place	In Place	In Place
✓	Rangely Airport	In Place	Needed	In Place	In Place	In Place
✓	Springfield Municipal	In Place	In Place	In Place	Needed	In Place
✓	Steamboat Springs	900 feet	In Place	In Place	In Place	In Place
	Spanish Peaks	In Place	Pending	Needed	Needed	Needed
	Sliver West	In Place	Needed	Needed	Needed	Needed
	Yuma Municipal	1,100 feet	Needed	In Place	Needed	In Place

✓ Denotes airport needing fewest improvements to meet emergency operator needs.



Astronaut Kent Rominger Airport - Del Norte, CO. Photo by Shahn Sederberg

Performance Measure: INVESTMENT

The investment performance measure is designed to ensure that the Division of Aeronautics is maximizing its historic investment. This is accomplished by identifying airports that could benefit from extensions to primary runways that are already in place and by identifying primary runway, taxiway, and apron pavements that could benefit from maintenance to improve their pavement condition index (PCI) rating.

Primary runway length objectives for system airports were established by the system plan as follows:

- **Major commercial and reliever airports – 75 percent of large aircraft at 90 percent useful load**
- **Other Major general aviation airports – 100 percent of all small aircraft**
- **All Intermediate Airports – 75 percent of small aircraft**
- **All Minor Airports – Maintain existing runway length**

The 2011 update to the system plan incorporated new FAA guidance on calculating runway length requirements; this resulted in longer runway length objectives for several airports in the Major category. As a result, fewer airports in the Major category meet their runway length objective in 2011 than did in 2005.

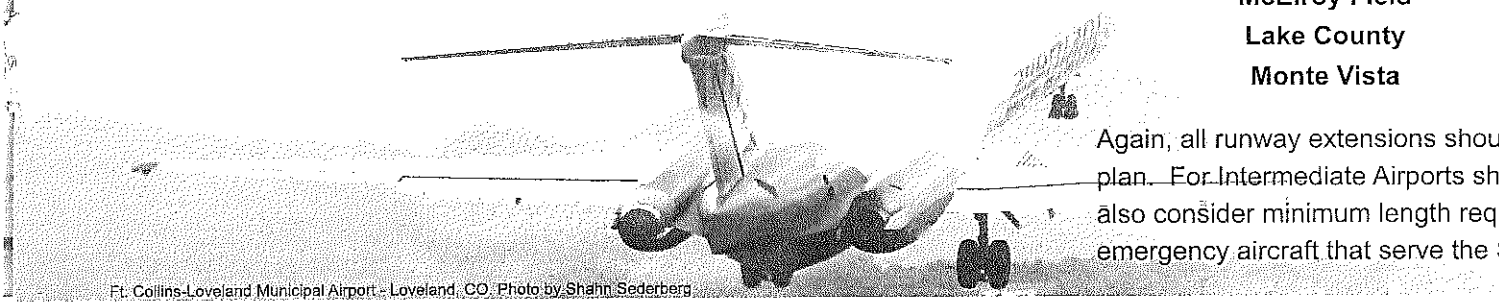
Previous analysis has shown that it is not feasible for all airports to meet their runway length objectives identified in the system plan; and the system plan, as part of its recommendations, considers these previous findings. Airports in the Major category that could be considered for runway extensions to help them better meet system plan runway length objectives are as follows:

Cortez-Montezuma County	**Stevens Field**
Vance Brand Municipal	**Front Range**
Meeker	

Actual lengths for runway extensions should be confirmed in an airport master plan and should be pursued based on actual need. Airports in the Intermediate category that could be considered for runway extensions include:

Mineral County	**Hopkins Field**
McElroy Field	**Steamboat Springs**
Lake County	**Walden-Jackson County**
Monte Vista	**Spanish Peaks Airfield**

Again, all runway extensions should be vetted through an airport master plan. For Intermediate Airports shown above, any runway extension should also consider minimum length requirements for the predominant types of emergency aircraft that serve the State.



Ft. Collins-Loveland Municipal Airport - Loveland, CO. Photo by Shahn Sederberg

Performance Measure: INVESTMENT

There are many types of projects that the Division of Aeronautics funds to help maintain and improve the condition of primary runway, taxiway, and apron pavements. A benchmark to evaluate the condition of primary runway pavements has been in place since 2000. New benchmarks to report on the pavement condition for primary taxiways and apron areas were added as part of this 2011 system plan update. Since the condition of primary pavement areas continually change, for any given reporting period, results will differ. The system plan has established an objective for all primary pavements to have a PCI rating of 75 or greater. At a rating of 75, pavements are generally considered to be in good condition but may still benefit from certain types of investment for pavement maintenance. All airports in the Major, Intermediate, and Minor categories that are included in the Division of Aeronautics Pavement Management Program are analyzed in association with the three pavement benchmarks. Airports currently needing a pavement project to meet system plan objectives for a PCI of 75 or greater on its primary runway, taxiway, and/or apron area are shown below.

PRIMARY RUNWAY PCI

Major Airports	Lamar	Meeker*		
Intermediate Airports	Colorado Plains Regional*	Kit Carson County	Perry Stokes*	Leach Field*
	Meadow Lake*	Mineral County*	Animas Airpark	Eads
	Fort Morgan Municipal	Glenwood Springs Municipal*	McElroy Field	Lake County*
	Hopkins Field*	Walden-Jackson County*	Spanish Peaks*	Yuma*
Minor Airports	Brush Municipal	Cuchara Valley	Las Animas City & County*	

PRIMARY TAXIWAY PCI

Major Airports	Grand Junction	Lamar	Ft. Collins Loveland	Front Range*
Intermediate Airports	Fremont County	Meadow Lake*	La Junta*	Springfield*

PRIMARY APRON PCI

Major Airports	Rocky Mountain Metropolitan*	Durango-La Plata County*	Lamar*	Meeker*
	Stevens Field*	Pueblo*		
Intermediate	Colorado Plains Regional	Boulder*	Astronaut Rominger	Blake Field*
	Animas Airpark	Fort Morgan Municipal*	Glenwood Springs	Springfield*
	Walden-Jackson County	Yuma*	Sterling Municipal*	
Minor Airports	Brush	Julesburg	Cuchara Valley	Las Animas City & County*

*Pavement related grant issued by the Division of Aeronautics

Performance Measure: INVESTMENT

As shown, the percent of system airports meeting the PCI objective for their primary runway has varied among the three reporting periods, but has remained somewhat similar. In subsequent updates to the system plan, PCIs for primary taxiways and primary apron areas will be measured against performance reported in this plan. For the Minor Airports included in the Division of Aeronautics' Pavement Management Program, none have a paved primary taxiway. Given the fact that PCIs are always changing, a target has been established to have 70 percent of all primary pavements meet a PCI of 75 or above.

Primary Runway PCI Ratings of 75 or Above

	2000	2005	2011
Major Airports	83%	80%	81%
Intermediate Airports	55%	69%	59%
Minor Airports	10%	11%	17%
Applicable System Airports	63%	70%	67%

Airports Meeting PCI Objectives in 2011

	Primary Taxiway	Primary Apron
Major Airports	83%	73%
Intermediate Airports	75%	66%
Minor Airports	N/A	20%
Applicable System Airports	80%	65%

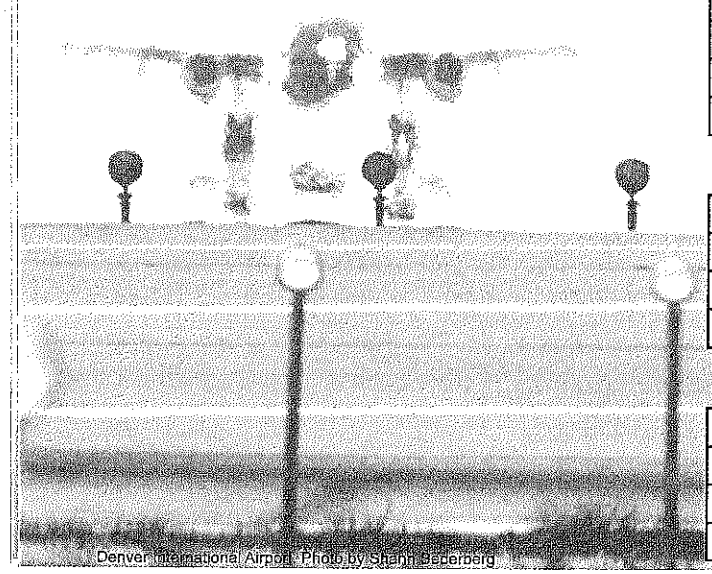
Performance Measure: SECURITY

The Security Performance Measure was added as part of the 2005 system plan update in response to TSA security guidelines for general aviation airports released in 2004. In order to identify security measures and equipment most appropriate for each general aviation airport, TSA also provides a procedure for assigning airports to levels of relative and perceived risk. In its guidelines, TSA identified 18 different types of security related equipment or procedures. As an airport's perceived level of risk increases, the types of security related equipment and procedures that it should have in place also increases.

As part of the 2005 system plan update, the Division of Aeronautics determined that it was appropriate for all airports in the Colorado system to have six basic security related enhancements in place. These six enhancements are as follows:

- All Aircraft Secured
- Community Watch Programs
- Positive Identification of Passengers, Cargo, and Baggage
- Emergency/Security Contact List
- Documented Security Procedures
- Signs Providing Information to Report Suspicious Activity

Information on system progress related to these six factors between 2005 and 2011 is shown here. System performance increased between 2005 and 2011 for four of the factors and decreased for the other two factors. The technical report for the system plan provides airport specific information on appropriate security related procedures and equipment.



Denver International Airport. Photo by Shann Seberberg

Documented SecurityProcedures	2005	2011
Major	73%	67%
Intermediate	19%	16%
Minor	18%	17%
All Airports	28%	26%

All Aircraft Secured	2005	2011
Major	91%	100%
Intermediate	84%	84%
Minor	76%	72%
All Airports	83%	84%

Positive Identification	2005	2011
Major	100%	100%
Intermediate	56%	63%
Minor	41%	44%
All Airports	60%	65%

Community Watch Program	2005	2011
Major	91%	100%
Intermediate	63%	66%
Minor	29%	33%
All Airports	58%	63%

Signs	2005	2011
Major	82%	83%
Intermediate	44%	41%
Minor	35%	33%
All Airports	48%	47%

Contact List	2005	2011
Major	91%	100%
Intermediate	91%	91%
Minor	65%	61%
All Airports	83%	84%

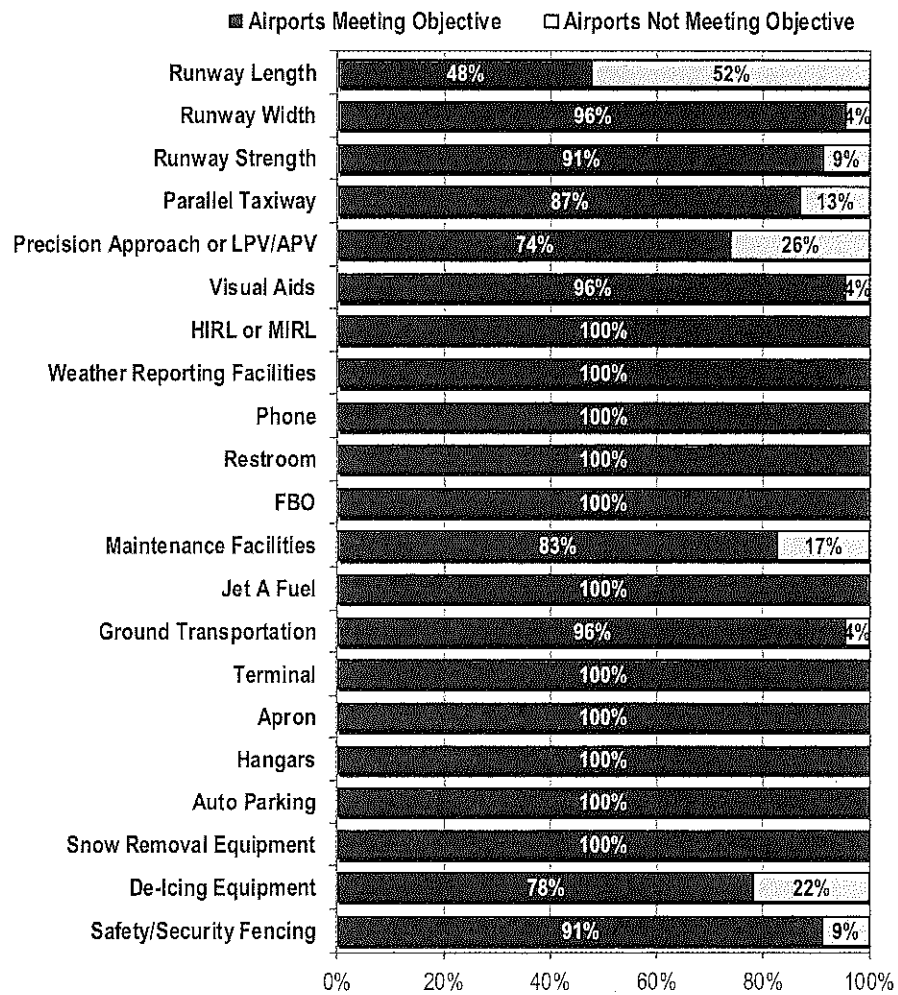
FACILITY & SERVICE OBJECTIVES

The system plan includes facility, service, and equipment objectives for airports assigned to each of the three role categories. These objectives have been refined and expanded as appropriate since they were established in 2000. Objectives reflect desirable development to best fulfill airport roles. Facility, service, and equipment objectives are not standards or requirements. Establishment of these objectives does not constitute a funding commitment on behalf of either the Division of Aeronautics or the FAA. When airport master plans are developed, applicable facility, service, and equipment objectives should be considered. The need for and sizing of more complex facilities is best verified within the context of an airport master plan.

Since the 2005 system plan update, Major Airports have shown improvement in their ability to meet objectives related to runway strength, parallel taxiway systems, visual landing aids, and runway lighting. Intermediate airports have shown improvement related to published approaches, on-site weather reporting equipment, taxiway systems, and visual landing aids. A higher percentage of Minor Airports meet their runway lighting and strength objectives.

The accompanying charts report on the ability of airports in each of the three role categories to meet their assigned facility, service, and equipment objectives. Projects needed to improve system performance relative to performance measures and their associated benchmarks and to improve airport performance relative to the plan's facility, service, and equipment objectives form the basis for cost estimates to improve and maintain Colorado's airport system in the coming years.

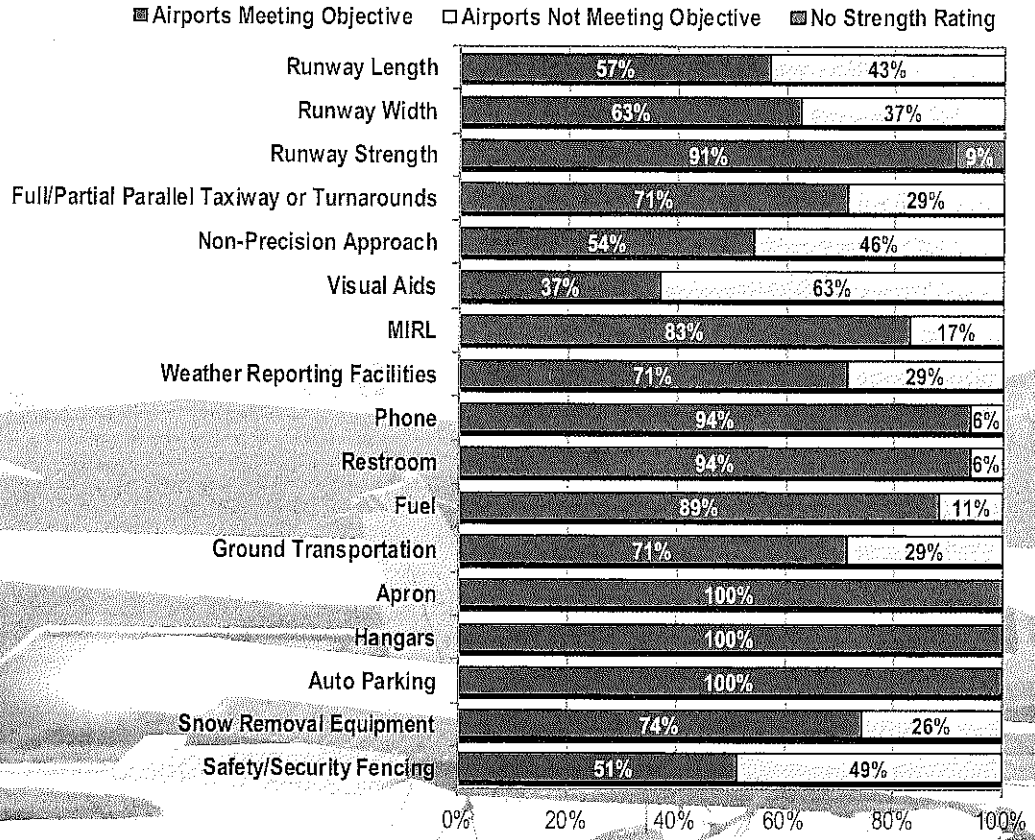
Major Airports



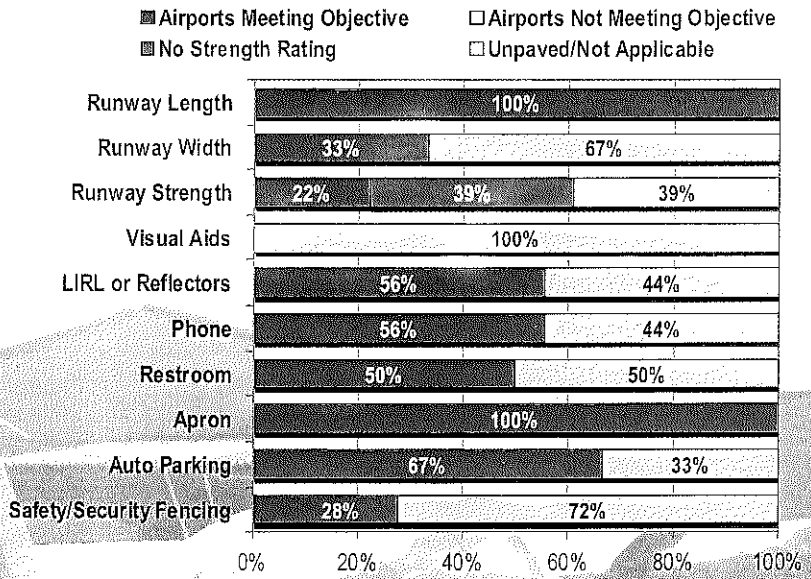
(Charts for Intermediate & Minor Airports continued on Page 18)

FACILITY & SERVICE OBJECTIVES

Intermediate Airports



Minor Airports

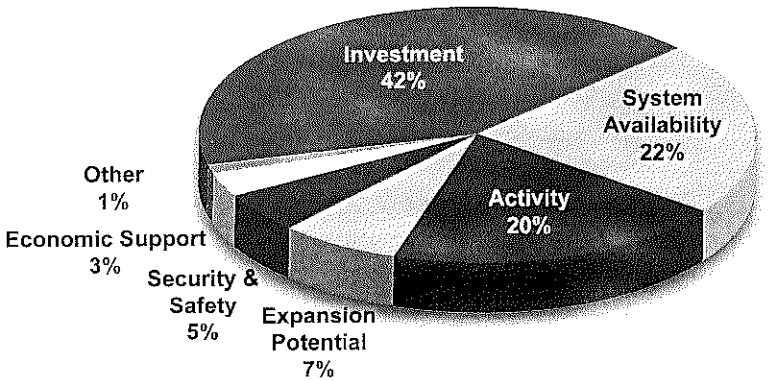


Vance Brand Municipal Airport - Longmont, CO. Photo by Shahn Sederberg

PLAN IMPLEMENTATION

The 2011 update to Colorado's Aviation System Plan identified projects needed to elevate system performance. All airports in the State Airport System are eligible for funding from the Division of Aeronautics; when the Division responds to an airport's grant request, they consider how the project relates to the system plan. The accompanying chart shows how grants issued by the Division of Aeronautics over the past four years relate to the system plan's performance measures.

Investment by Performance Measure
2009-2012

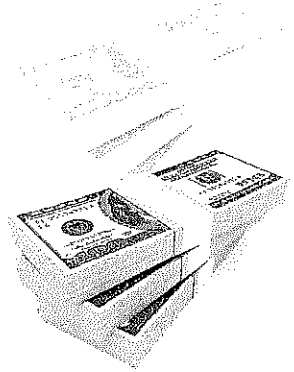


Cost estimates prepared for the system plan show that over the 20-year planning period, over $615 million could be needed to elevate system performance relative to this plan's benchmarks and facility, service, and equipment objectives. In addition to costs to implement the system plan, six-year capital improvement plans (CIP) submitted to the Division of Aeronautics by system airports show another $474 million in development needs. Over the 20-year planning period, total CIP costs for all system airports could reach $1.6 billion. Combined, system plan and current and estimated CIP costs for Colorado airports, with the exception of Denver International, could total approximately $2.2 billion over the next 20 years.

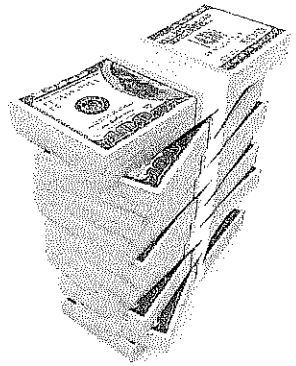
Funds for the Division of Aeronautics' grant program are derived from a State tax on aviation fuel. FAA grants come from the Airport Improvement Program (AIP); AIP is 100 percent funded by airport user taxes. When anticipated funds from the Division of Aeronautics, FAA, and local airport sponsors are considered, it is estimated that over the next 20 years, $1.3 billion in funding could be available to respond to combined system plan and CIP costs. This leaves a potential funding gap of $900 million. Reductions in AIP or in funds available from CDOT through the State fuel tax program have the potential to widen the funding gap.

For Colorado to have a balanced and viable airport system, strategic investment in those airports and those projects that are most essential to the success of the system is important. The 2011 Colorado Aviation System plan provides the Division of Aeronautics with information to support future investment decisions.

FUNDING SHORTFALL
$900 Million



Estimated Available FAA/State/Local Funding
$1.3 Billion



Estimated Colorado Airport Funding Needs
$2.2 Billion

SUMMARY

Colorado's Aviation System Plan is an important planning tool. The State's system plan provides an important bridge between the NPIAS and individual airport master plans that are prepared for airports in Colorado. Through its performance measures, the system plan helps Colorado achieve a balanced and viable airport system. The system plan identifies projects that are desirable to meet Colorado's transportation needs and its economic objectives.

Evaluation measures and airport roles, which form the basis for Colorado's system planning process, were first established in 2000. As FAA planning standards, technology, and airport and community conditions have changed; the framework for Colorado's Aviation System Plan has been modified accordingly. Based on the current aviation environment, the process to evaluate system performance and the procedures for determining airport roles remain solid.

When Colorado's Aviation System Plan is again updated in the 2017 time frame, it would be appropriate to re-visit system performance measures and their associated benchmarks to determine needed additions or adjustments. Likewise, as FAA planning guidance changes, facility, service, and equipment objectives contained in the system plan should also be adjusted, as appropriate, to reflect any change. Sometime in 2012, FAA is scheduled to release its ASSET Study; in this study, for the first time, FAA will distinguish roles for general aviation airports. Previously, FAA has classified general aviation airports in the NPIAS as being only reliever or general aviation. When Colorado's Aviation System Plan is next updated, it would be appropriate to review the Division of Aeronautics' airport role assignments and identify changes based on FAA's role assignments for general aviation airports.

Aviation will continue to change and technology will continue to evolve. Colorado is already on the leading edge of many technology changes as a result of its ground-breaking surveillance projects for mountain airports. This project made Colorado a leader in the implementation of FAA's NextGen airspace systems. As commercial applications for aviation technology change, projects are underway which will identify airports to be designated as spaceports and to serve flights by unmanned aerial systems (UASs).

By updating its aviation system plan on regular intervals, Colorado has the opportunity to expand and adjust the plan to reflect changes in technology; changes in FAA planning guidance; and changes in State, community, or airport conditions. On an annual basis, commercial and general aviation airports in Colorado support an estimated $10 billion in economic activity. When the annual economic impact of Denver International is considered, this figure increases to $32 billion. Airports in Colorado are important transportation and economic resources, and the 2011 update to the Colorado Aviation System Plan provides a blueprint to direct system growth and development in the coming years.

Silver West Airport - Westcliffe, CO. Photo by Shahn Sederberg.

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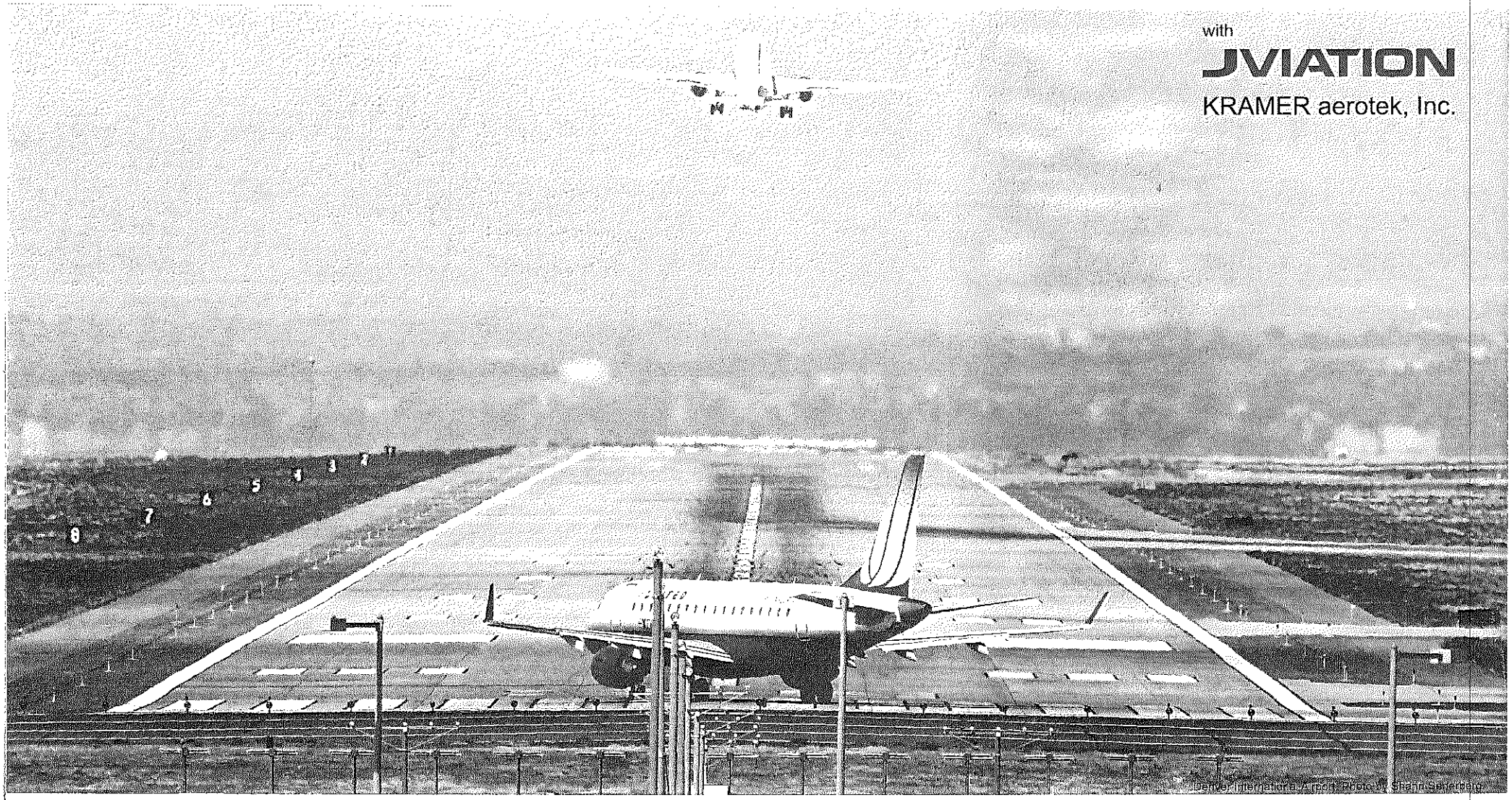

Denver International Airport. Photo by Shann Seherberg