

# MISSOURI

## STATE AIRPORT SYSTEM PLAN



Executive Summary

## Acknowledgement

*This document was produced under the auspices of the  
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MISSOURI

## BACKGROUND

The Missouri Department of Transportation – Aviation Section completed an update of the State Airport System Plan (SASP) in 2005. The SASP provides a macro level plan for guiding airport development in Missouri. It provides input into the FAA's National Plan of Integrated Airport Systems (NPIAS), individual airport master plans, and the State's long range plan, Missouri Advance Planning (MAP). The FAA uses the NPIAS as a basis for funding decisions, and the MAP guides the State in transportation investment evaluations.

The primary goal of the SASP is to build consensus among public policy makers and airport representatives to assist in implementation of the SASP recommendations. To that end, objectives were developed to measure the performance of the airport system in the areas of physical performance, economic benefit, and ease of accessibility for each airport. How each airport compared to specific benchmarks in each performance measure helped determine how well the system was performing and where improvements are needed.

In addition to the SASP, an economic impact analysis was conducted to calculate aviation's contribution to the state and local economies. The economic impact analysis examined each airport's benefits in terms of jobs, payroll, and output, which refers to spending. A third component conducted concurrently with the SASP and economic impact was a pavement management plan. Initially starting as a pilot program, the pavement management plan was expanded to evaluate the pavement condition index (PCI) at 66 of Missouri's public-use airports.

An extensive public involvement process was an important component of the SASP. Meetings were held at various locations throughout the State to present findings and obtain input. An advisory committee consisting of stakeholders in aviation, transportation, and economic development met throughout the study to provide guidance and direction.





## EXISTING SYSTEM

The Missouri Aviation System includes 116 public-use airports. For the purposes of the Missouri State Airport System Plan, Kansas City International and Lambert-St. Louis International airports were not included in this study. All of these public-use airports are a vital component to the State's transportation network. Of the 114 airports included in the system plan, six airports support regularly scheduled air carrier activities, with the remaining 108 airports serving a multitude of general aviation activities. The economic role that each airport in Missouri plays in its local economy and/or the surrounding region is important and should not be underestimated. In addition to serving as a business access point for corporations and suppliers, the State's airports support health, welfare, and safety-related activities that expand upon a community's quality of life.

### Facts about Missouri's Existing Aviation System

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**114** public-use airports

**6** commercial service airports

**108** general aviation airports

**76** airports are included in the NPIAS

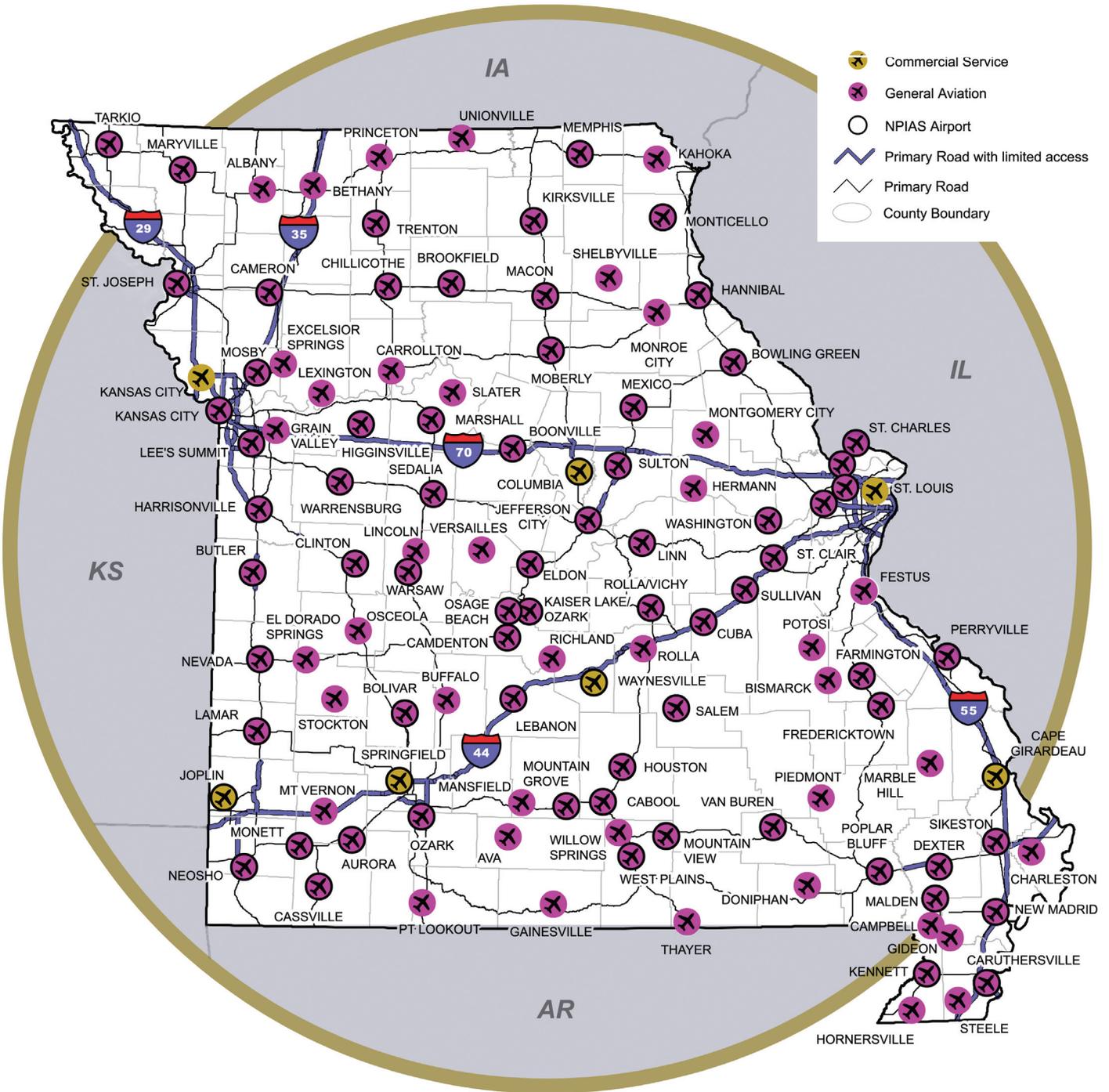
**77** airports have an instrument approach to their primary runway

**78** percent of Missouri's NPIAS general aviation airports have a PCI rating of 70 or greater for their primary runway

\* Facts exclude data on Kansas City International and Lambert-St. Louis International



# Existing Missouri Aviation System

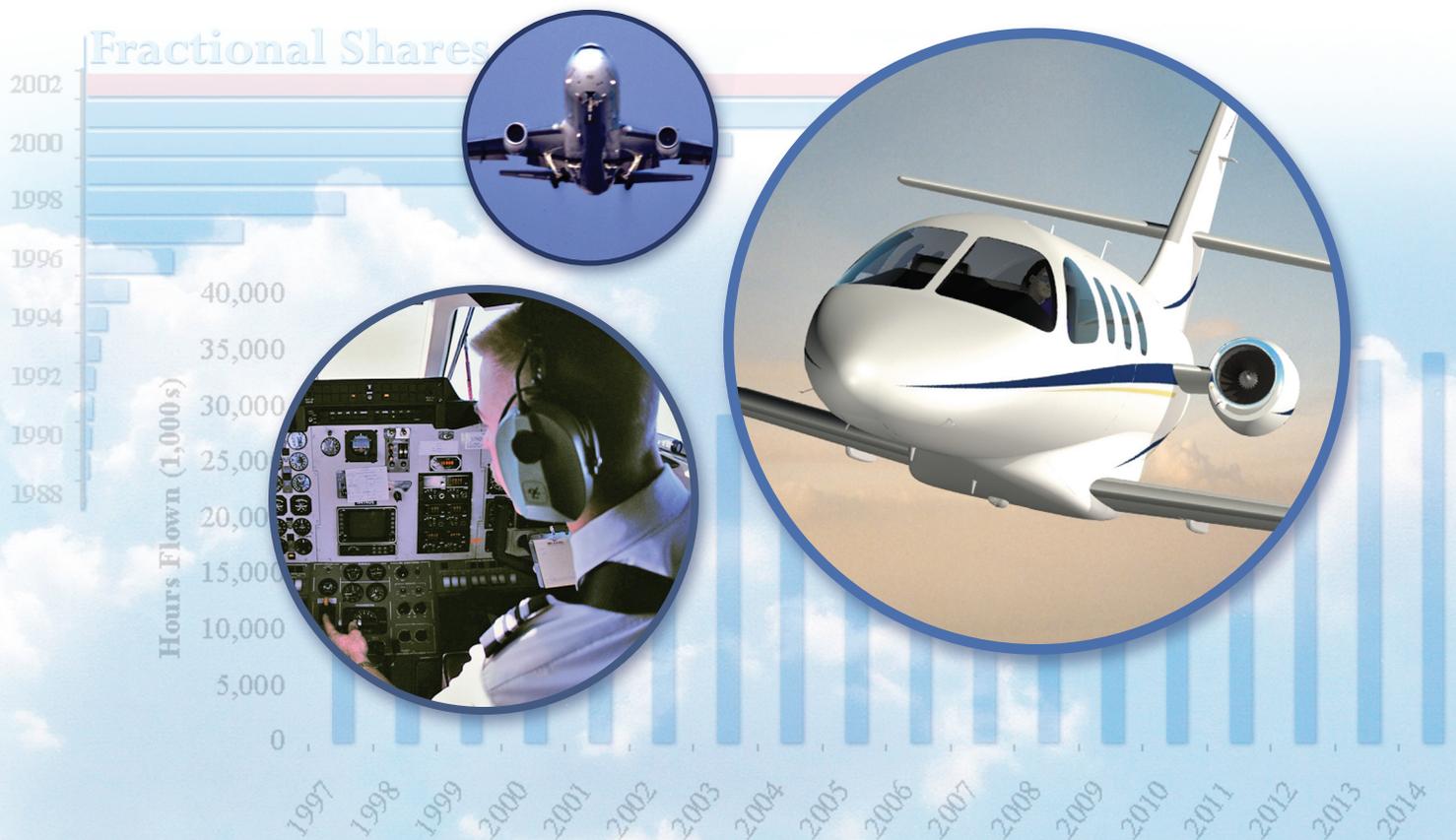


## AVIATION DEMAND

The growth of aviation in Missouri is influenced by both national and local factors. National trends in the airline industry can be felt at Missouri's commercial service airports. National general aviation trends are also extremely important because of the impact they have on Missouri's commercial and general aviation airports, especially in terms of the business use of general aviation aircraft.

Some of the more important national aviation trends that were considered in developing the aviation forecast for Missouri include:

- The positive impact of the General Aviation Revitalization Act of 1994 had on mitigating liability issues.
- The growth in the fractional share ownership market.
- The development of "personal jets," also known as Very Light Jets, with six or fewer seats and lower costs than existing business jets.
- The growth in use of turbine aircraft among businesses.
- The consequences of the terrorist attacks of September 11, 2001, and the follow-on security legislation.
- Recovery from the economic recession of 2001.
- FAA forecasts of future aviation activity, including active pilots, active aircraft, and hours flown.



Local conditions in Missouri were also a factor in evaluating future aviation activity in the State. A “bottom up” method used each airport’s historical based aircraft growth trend to project future activity. A “top down” method analyzed Missouri’s share of aircraft in the nation’s general aviation fleet and projected how Missouri’s fleet would grow in comparison to national FAA forecasts. A socioeconomic method examined population growth in each of Missouri’s counties and correlated this to growth in the general aviation fleet. Missouri’s aircraft operations were projected using an operations per based aircraft methodology and a methodology relying on the FAA’s forecast of general aviation hours flown.

Overall, Missouri’s aviation demand is projected to grow at levels similar to those projected at the national level.

### Based Aircraft and Operations Projections

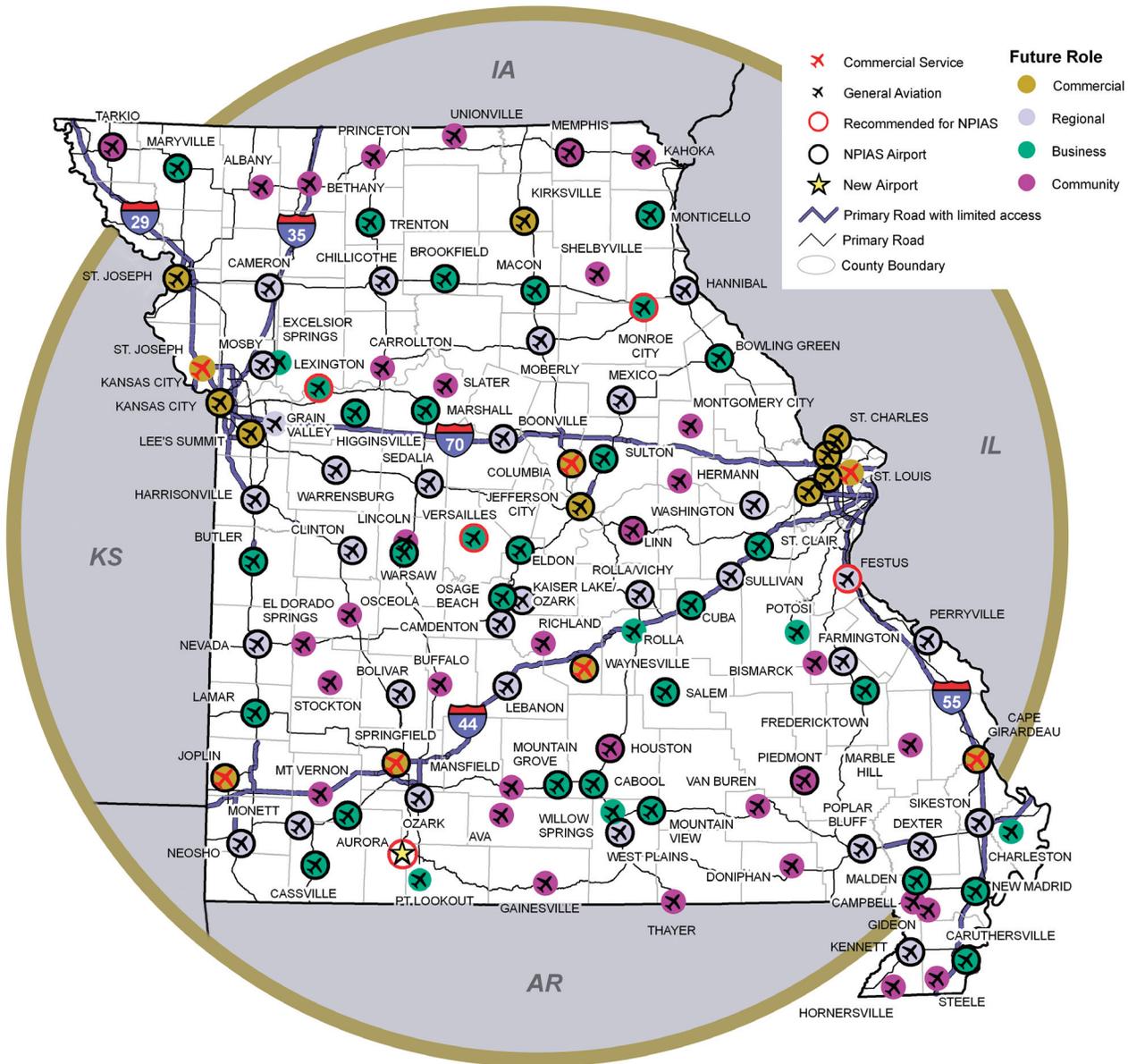
Year	2002	2007	2012	2022
Based Aircraft	3,902	4,103	4,380	4,837
General Aviation Operations	1,572,444	1,703,000	1,831,000	2,087,600



# RECOMMENDED SYSTEM

After identifying four different roles (Commercial, Regional, Business, and Community) served by airports in Missouri, the SASP determined what roles each airport in the system needed to fill and where new airports were needed. The recommended roles for the airports and their corresponding facility and service objectives as shown on the opposite page, provide guidance to the State on minimum standards for future airport development. It is recognized that not all airports can meet the standards, others may surpass the standards, and individual airport plans should be used to justify future airport development.

## Recommended Missouri Aviation System





Facility and service objectives were identified for each airport role and a comparison of existing facilities and services was conducted to develop recommendations for the system’s future development.

## Facility and Service Objectives Summary

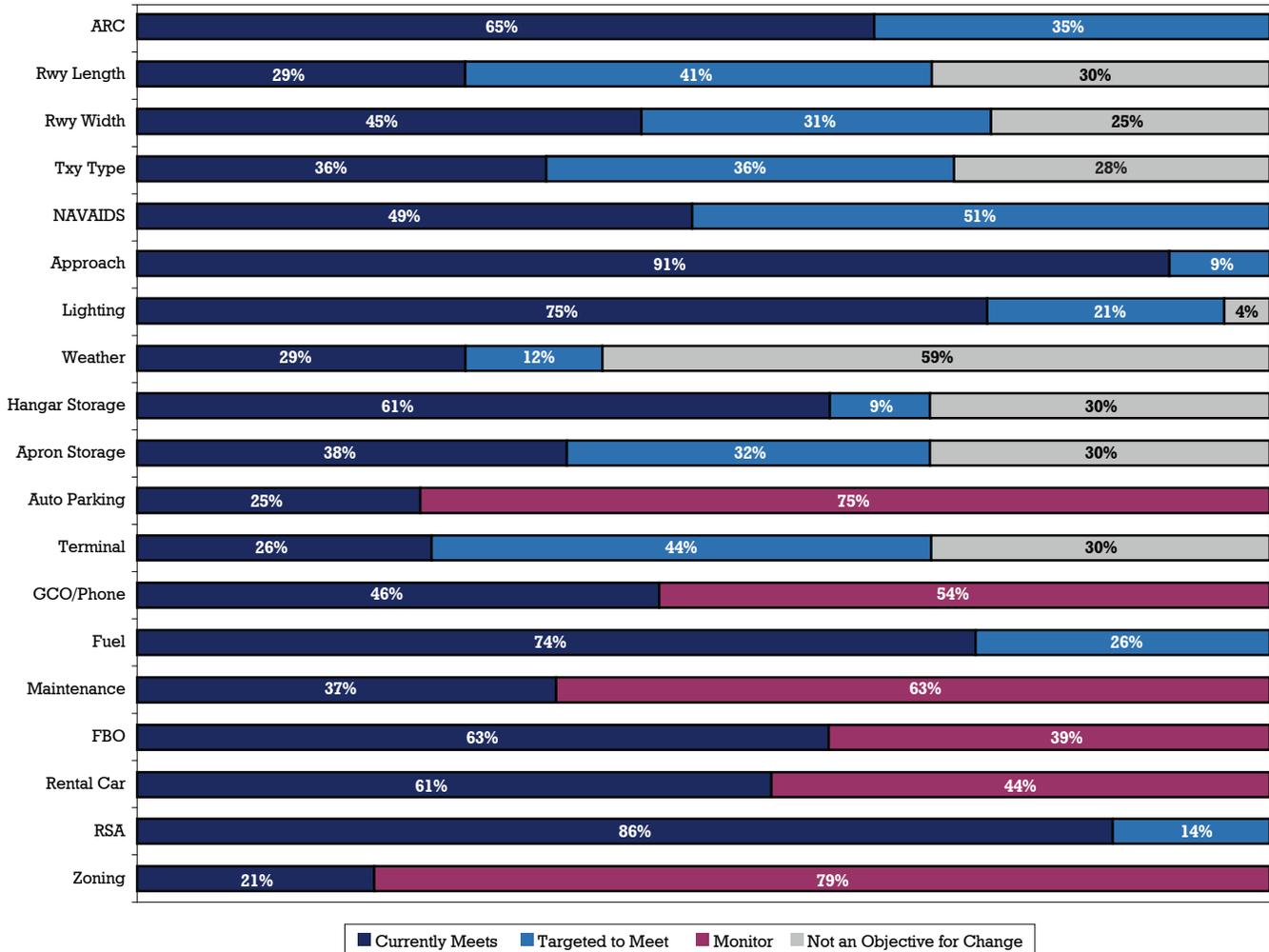
<b>Commercial Airports</b> Accommodate scheduled major/national or regional/commuter commercial air carrier service; or relieve scheduled air carrier airports of corporate aviation activity and provide Part 139 services.	Runway Length	5,500 feet
	Airport Reference Code (ARC)	C-II
	Approaches	Non-precision
	Hangar Storage	70% of based aircraft
	Terminal	2,500 square feet
	Services	Avgas - Jet A, Rental cars, Pilot lounge, Conference room, Public phone, Restrooms
<b>Regional Airports</b> Accommodate a wide range of general aviation users for large service areas outside major metropolitan areas of Missouri.	Runway Length	5,000 feet
	Airport Reference Code (ARC)	B-II
	Approaches	Non-precision
	Hangar Storage	70% of based aircraft
	Terminal	2,500 square feet
	Services	Avgas - Jet A, Rental cars, Pilot lounge, Conference room, Public phone, Restrooms
<b>Business Airports</b> Accommodate local business activities and general aviation users.	Runway Length	4,000 feet
	Airport Reference Code (ARC)	B-II
	Approaches	Non-precision
	Hangar Storage	60% of based aircraft
	Terminal	1,500 square feet
	Services	Avgas - Jet A (as required), Rental cars, Pilot lounge, Conference room, Public phone, Restrooms
<b>Community Airports</b> Accommodate limited general aviation use, including emergency and recreational use, in smaller communities of Missouri.	Runway Length	Maintain Existing Length
	Airport Reference Code (ARC)	A-I
	Approaches	Visual
	Hangar Storage	Maintain Existing
	Terminal	Maintain Existing
	Services	Avgas - Jet A (as needed), Public phone

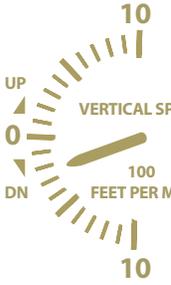
# SYSTEM PERFORMANCE

Missouri's airport system is intended to meet basic customer needs, provide adequate access to Missouri's economic centers, and provide convenient and reasonable ground and air access to its users. The SASP uses Physical, Economic, and Accessibility performance measures to gauge the success of the airport system at achieving these goals.

Each of these measures is compared to a benchmark which is based on the role the airport plays in the system. The percentage of airports meeting these benchmarks can give policy makers an indication of how well the system is meeting its objectives and help them focus resources and attention where it is most needed.

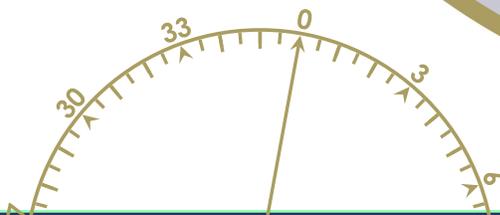
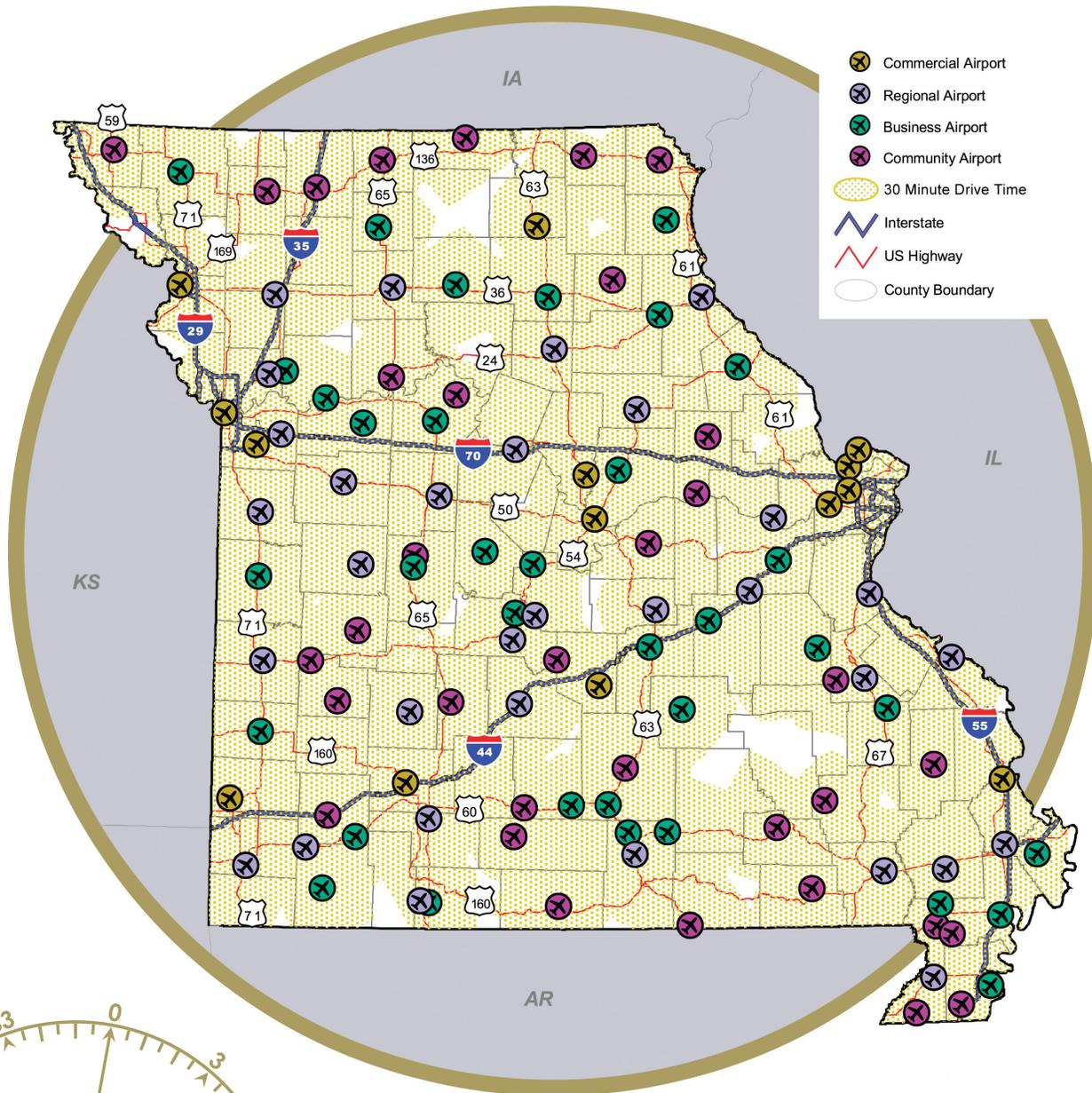
## Performance Measures





In addition to providing a means of evaluating individual airport performance, performance measures were used to evaluate how well the overall system performed. The SASP determined that 99 percent of Missouri's population is within a 30-minute drive time of an airport. This performance is considered to be very good as Missouri's population has excellent access to aviation facilities.

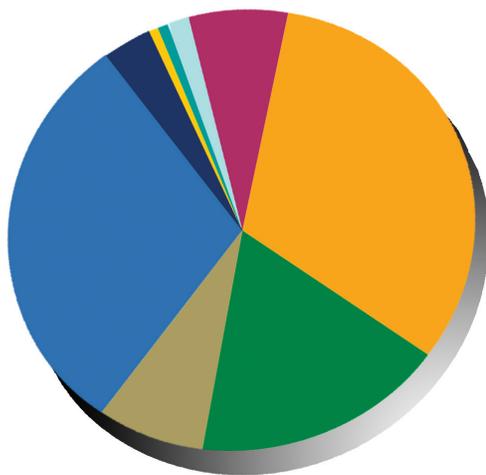
## Missouri Population within a 30-Minute Drive Time of any System Airport



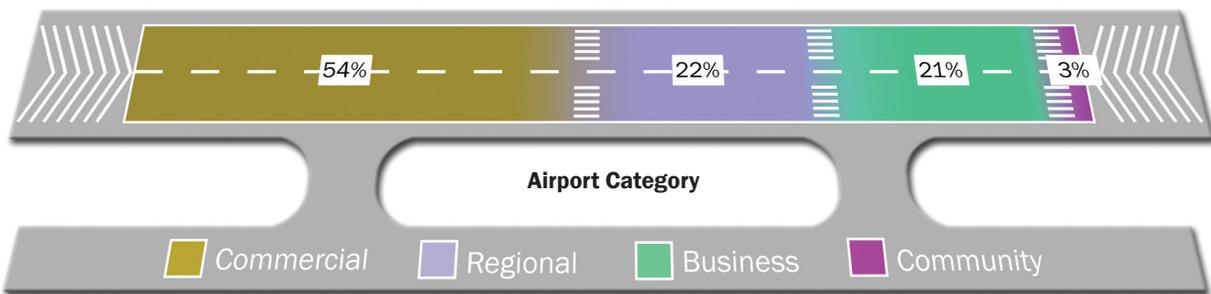
# CAPITAL IMPROVEMENT PLAN (CIP)

The Missouri State Airport System Plan provides an important tool that can be used to monitor the ability of airports to meet customer needs. The plan also provides a means to measure the effects of investment on the performance of the Missouri aviation system. Over the next 20 years, federal, State, local, and private funding will be needed to ensure that the aviation system meets goals established in this study. It is estimated that at least \$338.3 million will be needed over the next 20 years if airports in Missouri are to respond to objectives set by the System Plan. Additionally, when individual airport capital improvement projects are included, an additional \$371.8 million will be needed over the 20-year planning period for a total investment need of \$710.1 million if all needs are to be met. It should be noted that Kansas City International and Lambert-St. Louis International airports are not included in the System Plan's development costs.

## Total Development for Recommended System



Project Description	System Plan Project Cost	CIP Project Cost
1.5% Obstructions	\$5,992,350	\$4,475,696
6.9% Land Acquisition	\$46,329,900	\$11,235,000
31.8% Runway	\$169,205,407	\$56,834,930
17.7% Taxiway	\$79,833,699	\$45,704,990
7.5% Apron	\$16,571,560	\$36,792,568
29.9% Terminal Area	\$13,067,788	\$199,101,409
3.2% Lighting/NAVAIDS	\$14,588,494	\$8,543,563
0.6% Planning	\$1,612,500	\$2,749,750
0.9% Equipment	\$0	\$6,385,050
<b>100% TOTAL</b>	<b>\$338,376,691</b>	<b>\$371,822,956</b>



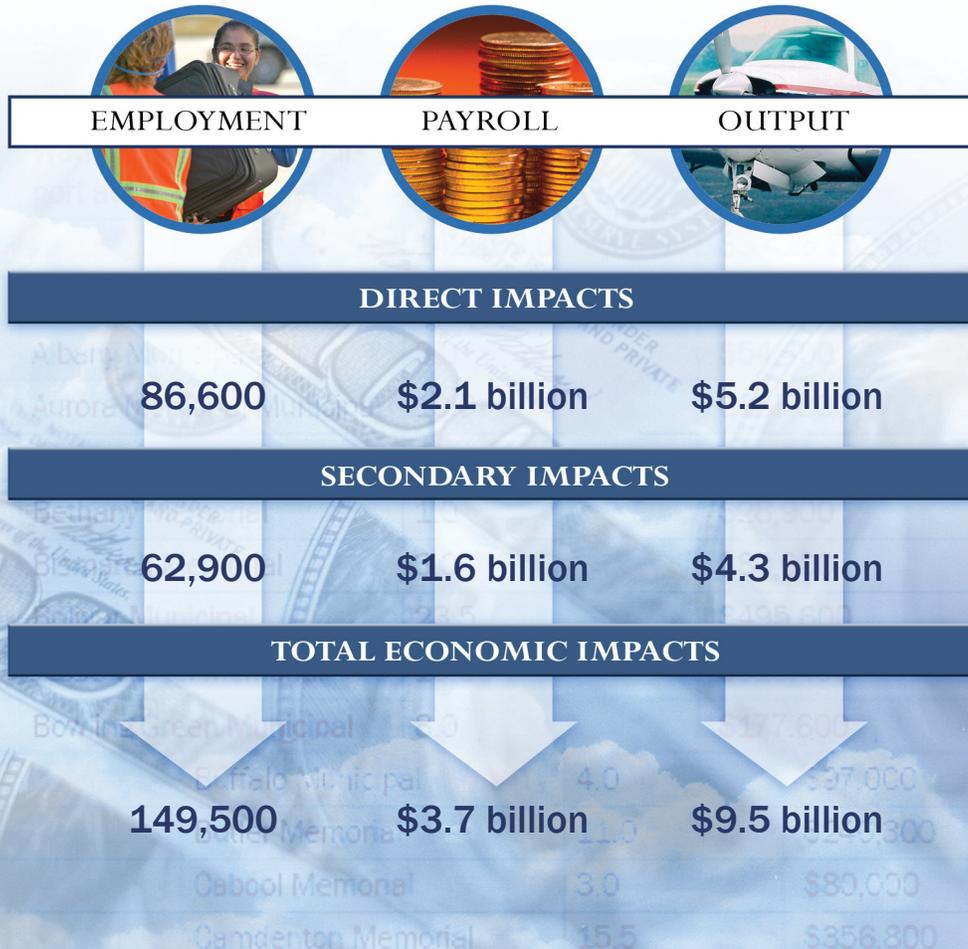
The importance of Missouri's airports to the economy of the State as well as individual cities and counties is undeniable. The system must be maintained and justifiably expanded to meet not only the needs of the aviation community but also the economic demands in the State.

# ECONOMIC IMPACT

Missouri's airports are an integral component of the State's transportation system, providing for the safe and efficient movement of people and goods and contributing to the economic vitality of the State.

The SASP took into account direct and indirect contributions from Missouri's airports in determining the total economic impact. These contributions included benefits from employment, payroll, and output to the economy. The Impact Analysis for Planning model took into account primary and secondary benefits. Primary benefits consist of direct benefits such as employment, payroll, and business spending, as well as indirect benefits which include off-airport spending as the result of air travel, such as lodging and meals. Secondary benefits are the result of recirculation of primary benefits, also known as the multiplier effect. An example is an airport employee that spends some payroll in the local economy, which in turn may recirculate in the economy.

In total, Missouri's general aviation airports contribute over \$1 billion in economic impact to the State's economy. The economic benefit provided from Missouri's eight commercial service airports, including Kansas City and Lambert St. Louis International, is even more dramatic, with more than \$8 billion in economic impact in the State.



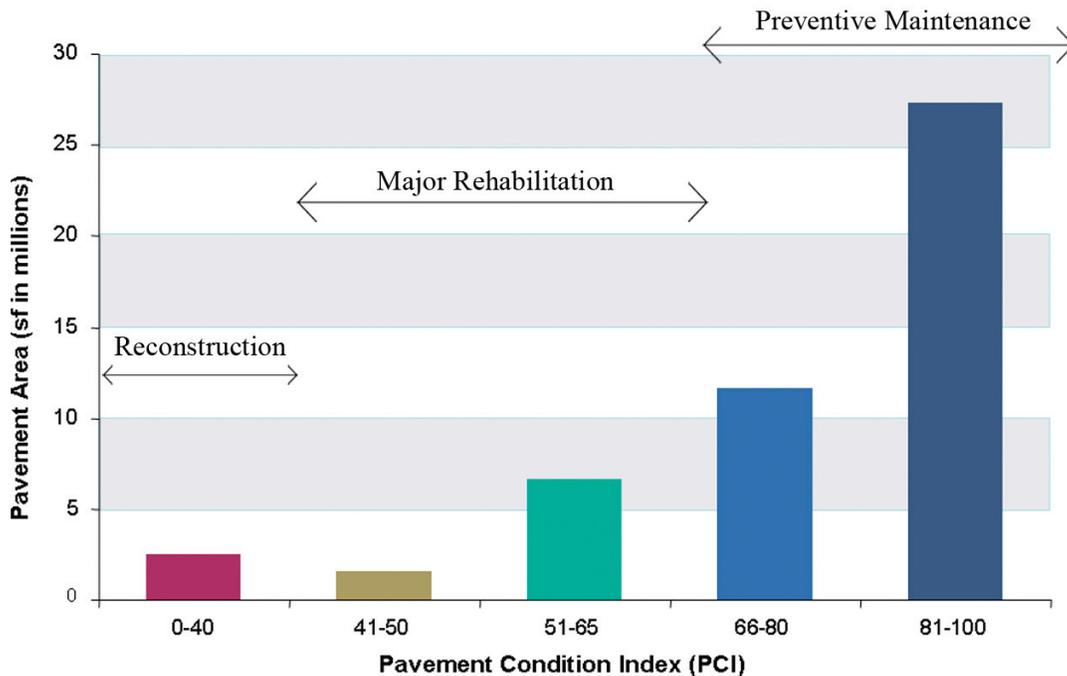
# Pavement Management Study

The State Airport System Plan included the establishment of an Airport Pavement Management System (APMS) for 66 airports in Missouri. The establishment of the APMS provides MoDOT and the FAA with the information needed to proactively manage the maintenance and rehabilitation of the pavement infrastructure in the most fiscally responsible manner possible and to anticipate pavement-related funding needs.

Pavement conditions at the airports were assessed using the Pavement Condition Index (PCI) procedure. During a PCI evaluation, visible signs of deterioration were identified and then characterized the defects in terms of type of distress, severity level of distress, and amount of distress. The PCI number provides an overall measure of condition and an indication of the level of work that will be required to maintain or repair a pavement. The overall area-weighted condition of the Missouri airports is 78, on a scale from 0 to 100 (with 100 representing a pavement in excellent condition).

The importance of identifying not only the best repair alternative but also the optimal time of repair is critical. The financial impact of delaying repairs can mean repair expenses 4 to 5 times higher than repair expenses triggered over the first 75 percent of the pavement life. By evaluating the condition of pavement and using an APMS to project future pavement condition, the airport sponsor and MoDOT can identify the most economical time to apply pavement maintenance and rehabilitation.

## PCI Condition Distribution



## KEY FINDINGS

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Recommended system includes 115 airports.

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All airports were assigned to one of four roles or categories; Community are airports of local impact; Business is the minimum standard general aviation airport; Regional are business airports of regional impact; and Commercial are airports serving regional, State, and national networks.

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99% of Missouri's population is within a 30-minute drive time of any system airport.

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The System and CIP development costs will average \$35.5 million per year for the 20-year planning period.

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Airports in Missouri are expected to accommodate over 900 additional based aviation aircraft and 515,000 more annual aviation operations by the year 2022.

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The total economic benefit of aviation in Missouri includes 149,000 jobs \$3.7 billion in payroll, and \$9.5 billion in total output.

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78 percent of Missouri's NPIAS general aviation airports have a PCI rating of 70 or greater for their primary runway.





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