



EXECUTIVE SUMMARY

STATE AIRPORT SYSTEM PLAN

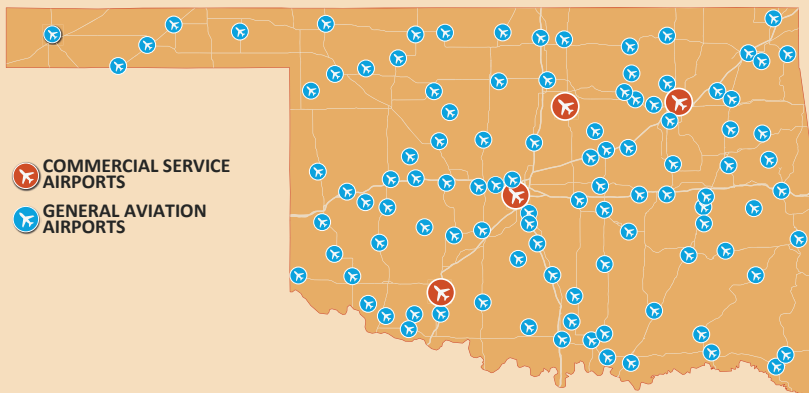
SYSTEM PLAN OVERVIEW

Following guidance provided by the Federal Aviation Administration (FAA), the Oklahoma Aeronautics Commission (OAC) completed a comprehensive statewide airport system plan. The plan provides OAC with a blueprint to raise the bar for the airport system's future performance. Results of the system plan guide OAC to strategically develop and invest in airports and projects that have the highest potential to provide Oklahoma with airports that are equipped to serve the state's transportation needs and its economic objectives. This summary highlights the planning process and key study findings. The complete system plan and other study products are available by contacting OAC or by visiting oac.ok.gov.

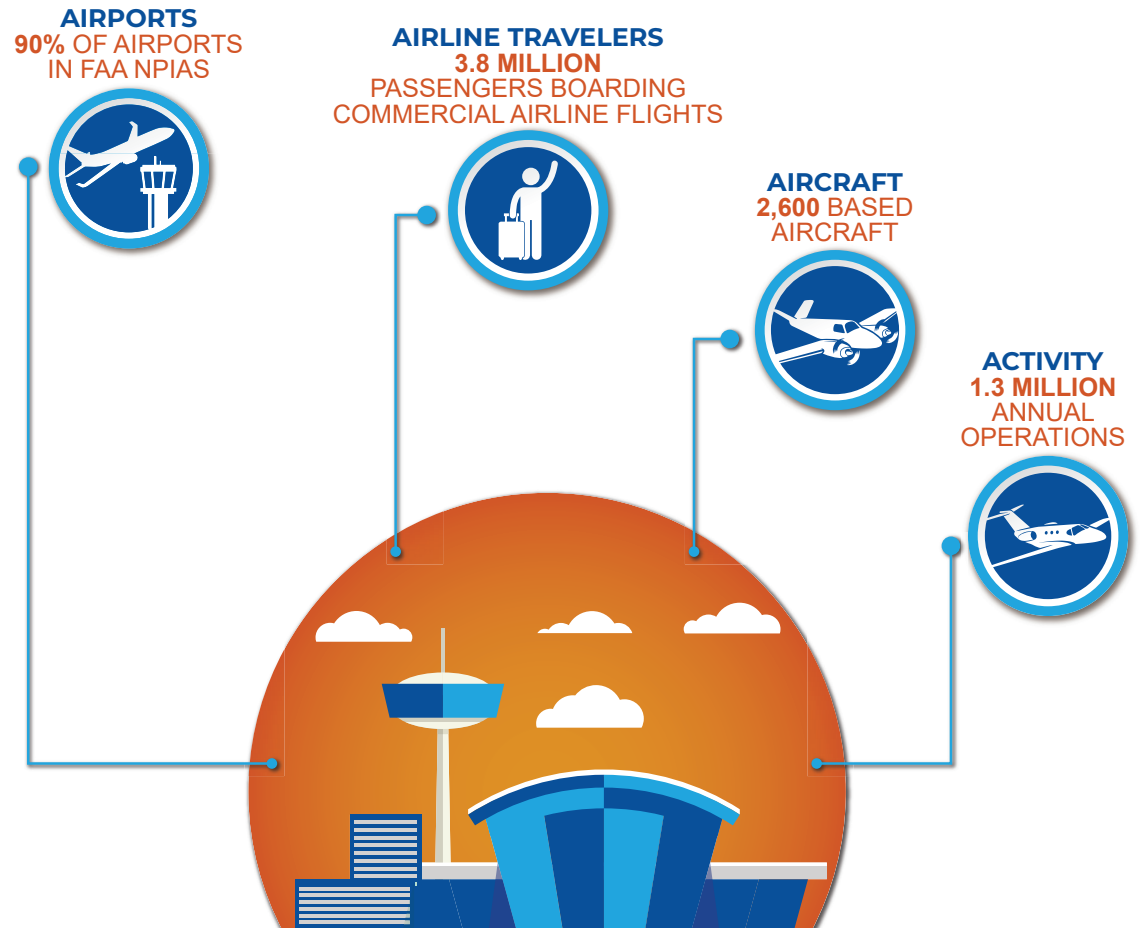
EXISTING AIRPORT SYSTEM

- 108 total system airports
- 4 airports with scheduled commercial airline service
- 104 general aviation airports

General aviation encompasses a wide variety of flights ranging from those conducted by large business jets, to flights by twin and single-engine aircraft, to flights flown by aerial applicators. About 90 percent of airports in the state system are also included in the federal airport system by virtue of their inclusion in the National Plan of Integrated Airport Systems (NPIAS); airports included in the NPIAS are eligible to compete for funding from the FAA.



OKLAHOMA AIRPORT SYSTEM CHARACTERISTICS



STUDY PROCESS

The study's robust inventory process includes gathering data to document current facilities, services, and activity levels. Additional information to ascertain the system's current ability to meet key FAA development standards is also secured. The current performance of the system is evaluated, and roles are assigned to each system airport. Results from the system evaluation and from an analysis of facility and service objectives for all airports results in system plan identified projects. Cost estimates provide a general context for the level of investment that could be required to implement the plan's recommendations.



INVENTORY



FORECAST



AIRPORT
ROLES



SYSTEM
EVALUATION



FACILITY/
SERVICE
OBJECTIVES



ESTIMATED
COSTS



RECOMMENDATIONS

SYSTEM EVALUATION

A series of performance measures and associated benchmarks form the basis for identifying adequacies, deficiencies, and possible overlaps that characterize Oklahoma's current airport system. A summary of current statewide performance is included in this summary.

OKLAHOMA SYSTEM PERFORMANCE MEASURES



A SYSTEM THAT IS **SAFE**



A SYSTEM THAT IS **EFFICIENT**



A SYSTEM THAT IS **ACCESSIBLE**



A SYSTEM THAT **SUPPORTS THE ECONOMY**



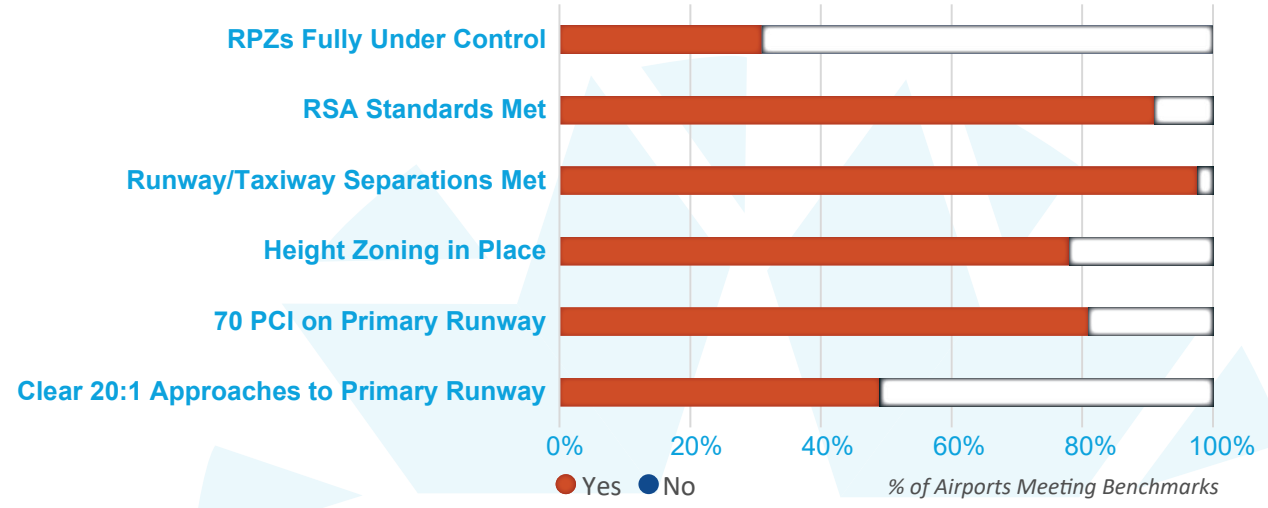
A SYSTEM THAT **MEETS USER NEEDS**



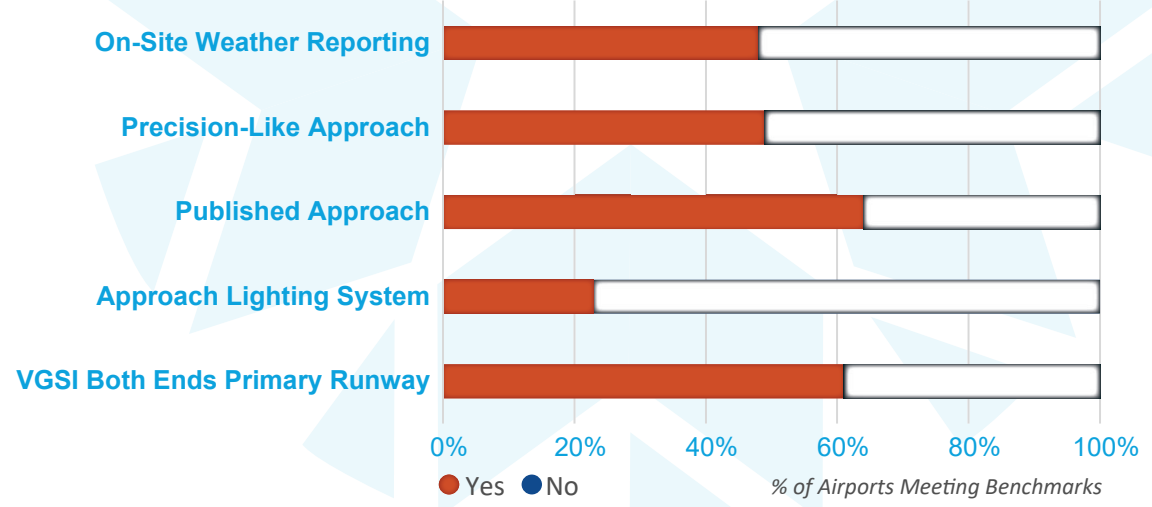
PERFORMANCE MEASURES AND EVALUATION BENCHMARKS



SAFETY PERFORMANCE MEASURE

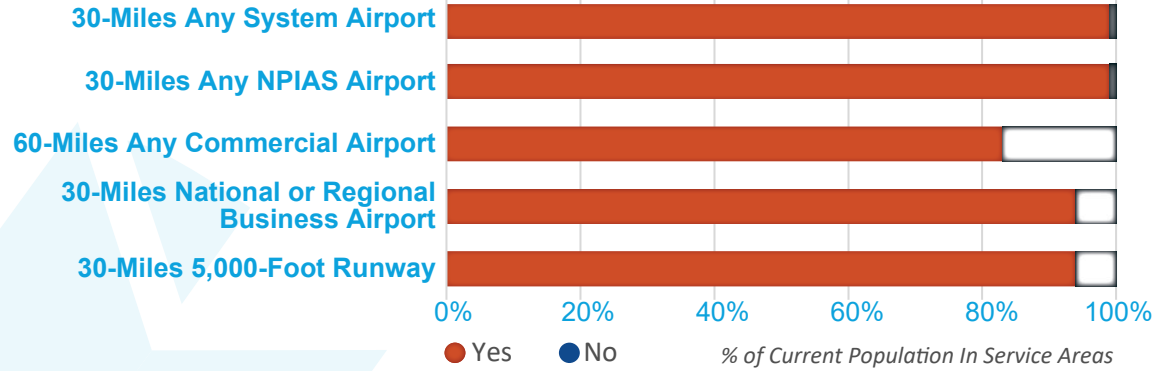


EFFICIENCY PERFORMANCE MEASURE

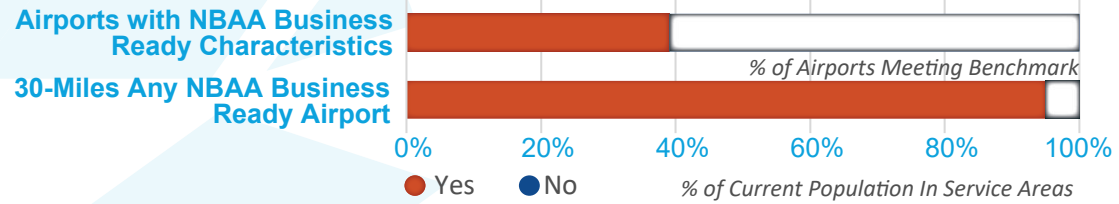




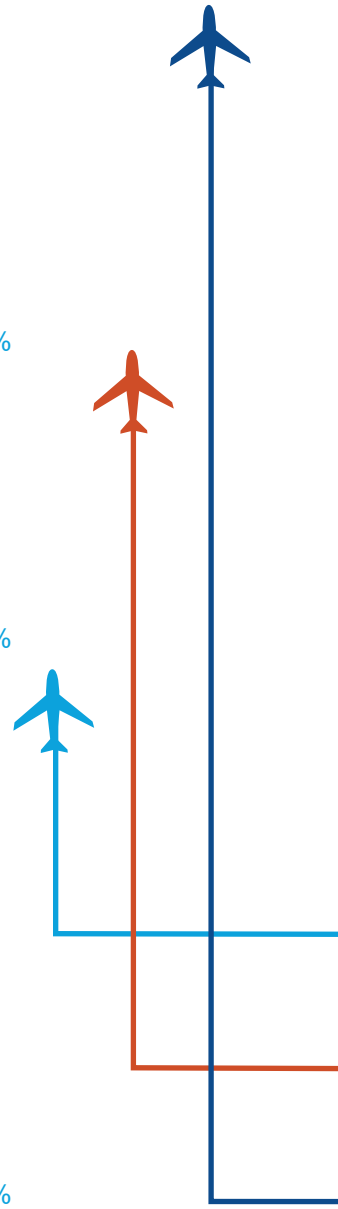
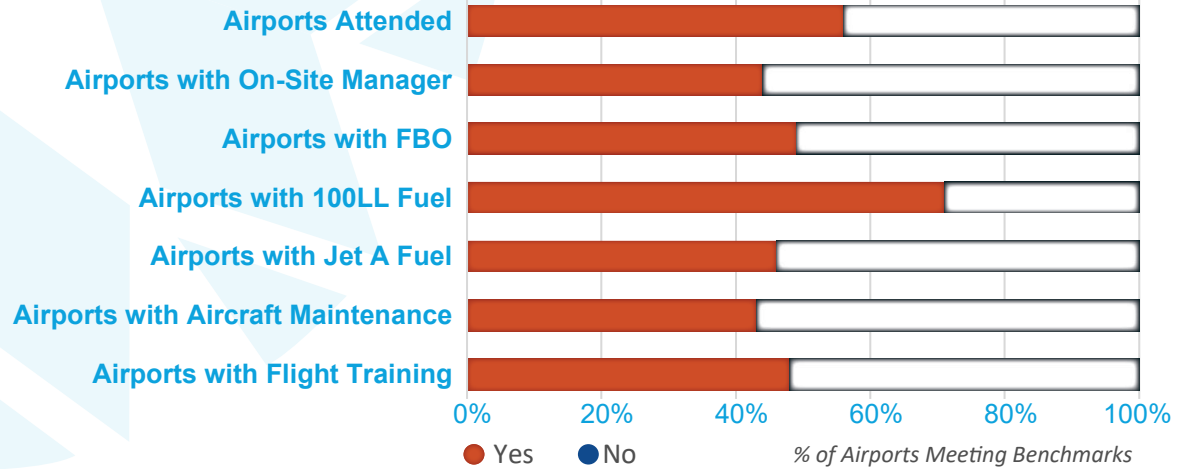
ACCESSIBILITY PERFORMANCE MEASURE



ECONOMIC SUPPORT PERFORMANCE MEASURE



USER NEEDS PERFORMANCE MEASURE



AIRPORT ROLES

Airports in Oklahoma serve different types of users, aircraft, and communities. As a result, airports play different roles within the state airport system. An in-depth evaluation process establishes a role for each study airport. This process identifies detailed characteristics for each airport as they relate to facilities, services, and communities each airport serves. Characteristics are scored and airports are ranked to establish their role in the state airport system. Airports are assigned to one of four roles; these roles are National Business, Regional Business, General, and Community.



NATIONAL BUSINESS AIRPORTS



- Serve larger business jets
- Support non-stop flights to all domestic and some international locations
- Have terminals, Fixed Base Operators (FBO), and Jet A fuel
- Have full parallel taxiway, precision approach, and approach lighting
- Serve large communities
- Have significant economic impact



REGIONAL BUSINESS AIRPORTS



- Serve medium business jets
- Have full parallel taxiway and precision-like approach
- Serve medium-size communities
- Support non-stop flights to most domestic locations
- Have a terminal, Jet A fuel, and FBO
- Support notable economic impact



GENERAL AIRPORTS



- Serve mid-size markets
- Accommodate twin-engine planes and small business jets
- Support flights to regional destinations
- Have published approach and 100LL fuel
- Provide measurable economic impact



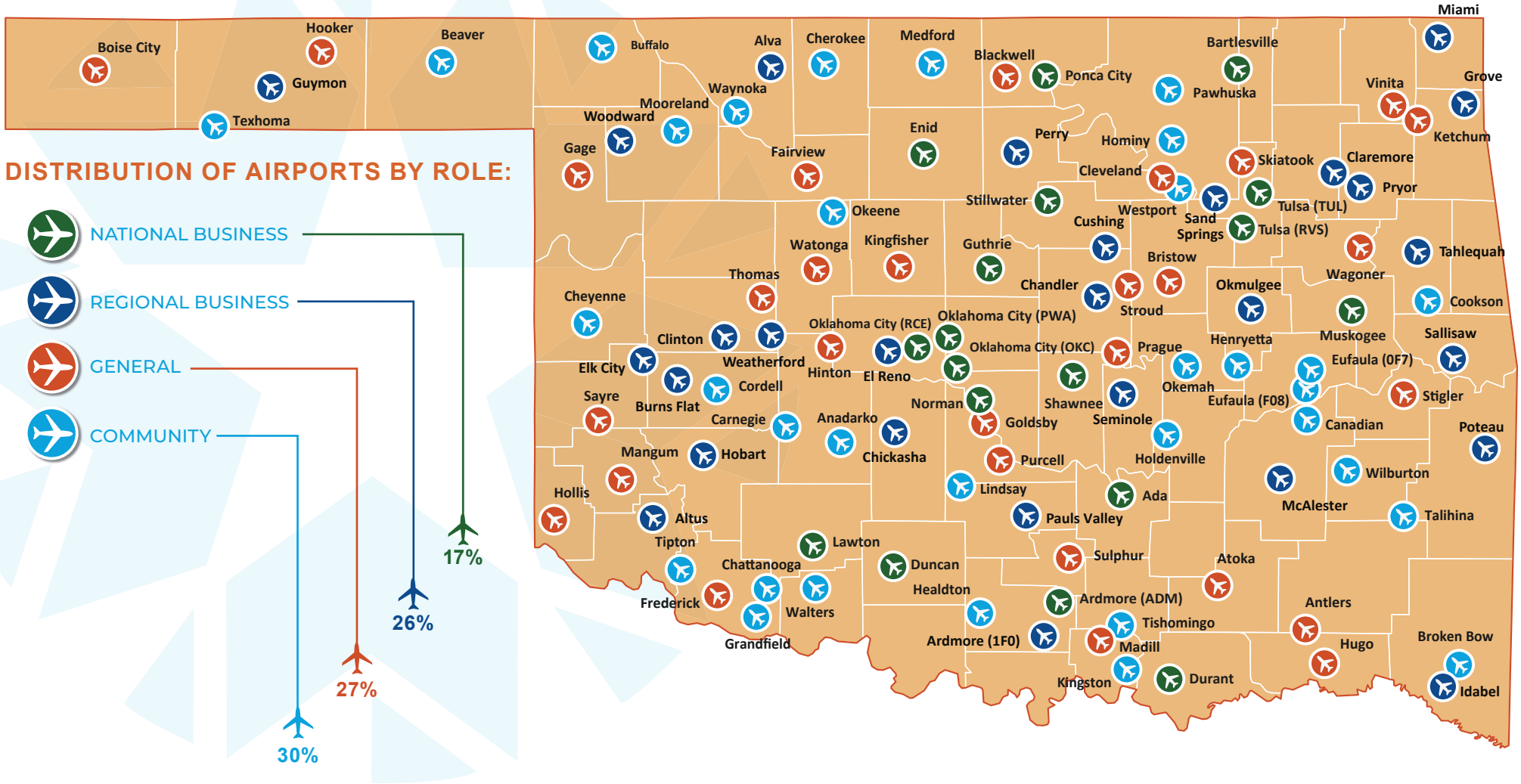
COMMUNITY AIRPORTS



- Serve small communities
- Accommodate small twin and single-engine planes
- Have facilities and services more limited in scope
- Support lower levels of economic impact

RECOMMENDED ROLES FOR OKLAHOMA AIRPORTS

The airport role assignment process scores and ranks airports using a variety of factors. Factors include based aircraft, total operations, business jet activity, airfield facilities, approach capabilities, community characteristics, FAA role, aviation services, and economic impact. Cumulative scores for all factors determine each airport's role category. Oklahoma airports are classified as National Business, Regional Business, General, or Community.



EXECUTIVE SUMMARY

FACILITY AND SERVICE OBJECTIVES

Airports in Oklahoma should ideally be equipped with facilities and services to fulfill their designated role in the state airport system. As part of the system plan, a report card is developed for each airport. The report card compares current facilities and services to those for each airport's recommended role and any deficiencies are noted. Costs to address noted deficiencies are also identified in the plan. Individual airport report cards are available in Appendix C to the system plan's Technical Report.

NATIONAL BUSINESS		REGIONAL BUSINESS		GENERAL		COMMUNITY	
AIRSIDE FACILITIES							
Airport Reference Code	ARC C or D		B-II		B-I		A-I or B-I Small
Primary Runway Length	6,000 feet		5,000 feet		4,000 feet		3,200 feet
Primary Runway Width	100 feet		75 feet		75 feet		60 feet
Taxiway	Full Parallel		Full Parallel		Partial/Turnaround (high activity) & Turnaround Both (low activity)		Turnaround one end (high activity only)
Runway Lighting	MIRL		MIRL		MIRL		MIRL
Taxiway Lighting	MITL		MITL		MITL (on partial parallel high activity only)		N/A
Approach	ILS or LPV		LPV		Non-Precision		Non-Precision (high activity only)
Approach Lighting System	Both Ends		One End or within 30 miles of ALS		N/A		N/A
Primary Runway PCI	PCI 70		PCI 70		PCI 70		PCI 70
Weight Bearing Single Wheel	20,000 pounds		20,000 pounds		12,500 pounds		12,500 pounds
Weight Bearing Dual Wheel	75,000 pounds		50,000 pounds		30,000 pounds		N/A
Aircraft Ramp	25,000 SY		16,000 SY		3,500 SY (low activity) and 7,000 SY (high activity)		2,000 SY (low activity) and 3,500 SY (high activity)
Covered Aircraft Storage	100% of Based AC		100% of Based AC		100 % of Based AC		95% of Based AC
NAVAIDS							
Rotating Beacon	Yes		Yes		Yes		Yes
Segmented Circle	Yes		Yes		Yes		Yes
Wind Cone	Yes		Yes		Yes		Yes
VGSI	Both Ends 4 Box PAPI		Both Ends		Both Ends		2 Box VASI non-precision (high activity only)
REILs	Both Ends		One End/Non-Approach		End with approach		N/A
Weather Reporting	ASOS or AWOS		ASOS or AWOS		ASOS or AWOS (high activity only)		N/A
GENERAL AVIATION TERMINAL							
Size	2,500 SF		2,500 SF		750 SF (low activity) and 1,500 SF (high activity)		500 SF (high activity only)
24/7 Accessible Keypad	Yes		Yes		Yes		Yes
Conference Room	Yes		Yes		N/A		N/A
Pilot Lounge	Yes		Yes		Yes		N/A
Office for Airport Manager	Yes		Yes		N/A		N/A
Public Waiting Area	Yes		Yes		N/A		N/A
SERVICES							
100LL	Yes		Yes		Yes		Yes (high activity only)
Jet A	Yes		Yes		Yes (high activity only)		N/A
Fueling Jet A Truck 24/7	Yes		N/A		N/A		N/A
FBO Services	Yes		Yes		N/A		N/A
Aircraft Maintenance	Full Service		Yes		N/A		N/A
Ground Transportation	Yes		Yes		Yes		N/A
Overnight Transient Hangar	2 Spaces Jets		1 Space Jet		N/A		N/A
Ground Power Unit (GPU)	Yes		N/A		N/A		N/A
LAV Service Cart	Yes		N/A		N/A		N/A

RECOMMENDATIONS

Projects needed to meet the plan's facility and service objectives at the individual airport level form the core of the plan's recommendations. Before projects identified can be implemented, all will require sufficient demand levels to support the improvement and some will require justification in an airport specific master plan. It is also important to understand that because of physical, financial, political, developmental, and/or community constraints, some airports may not be able to meet all identified objectives. Results reported in this section assume that all airports will strive to meet their respective objectives identified in the system plan.

10 AIRPORTS

need action to meet primary runway RSA standards and safety improvement

2 AIRPORTS

need action to meet current runway/taxiway separation standards

54 AIRPORTS

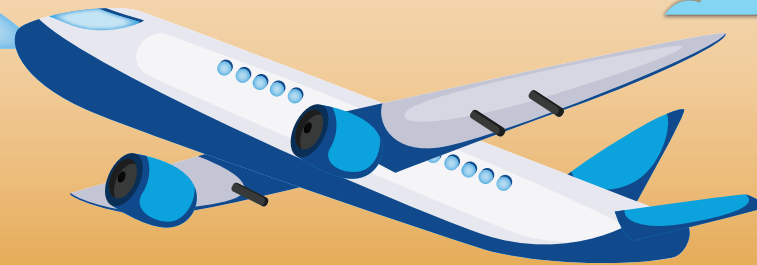
need actions to resolve 20:1 primary runway approach obstructions

23 AIRPORTS

need a height zoning ordinance

75 AIRPORTS

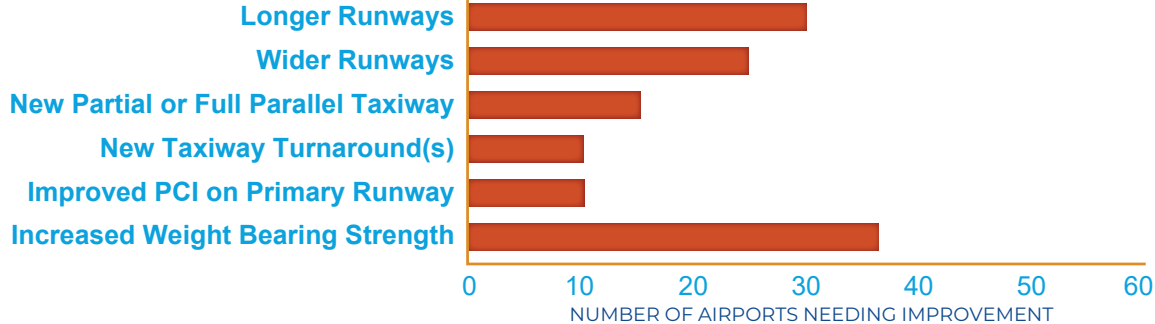
need action to gain complete control over all RPZs



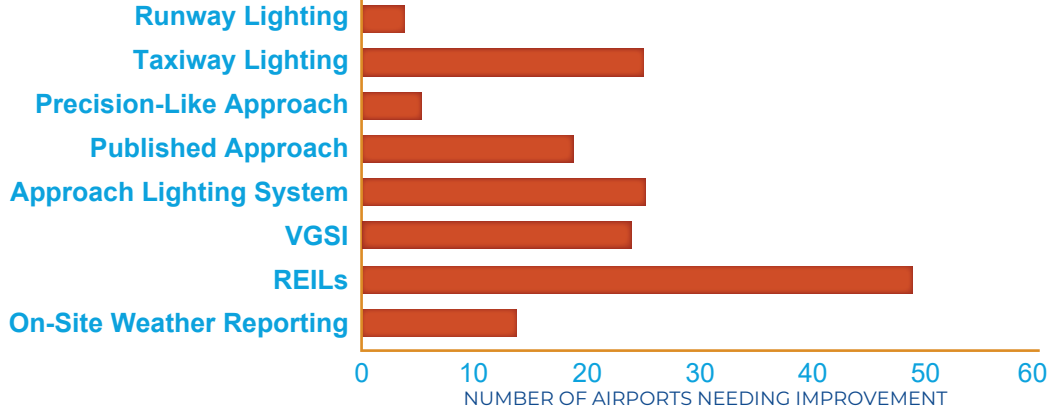
FAA STANDARDS IMPROVEMENTS

The Oklahoma plan included analysis to determine if system airports are meeting some of the more essential FAA design and safety standards. A detailed analysis of an airport's ability to meet appropriate FAA design criteria is best accomplished within the context of that airport's specific master plan. Nevertheless, results from the system plan provide important information on where actions are desirable to improve system performance related to FAA standards.

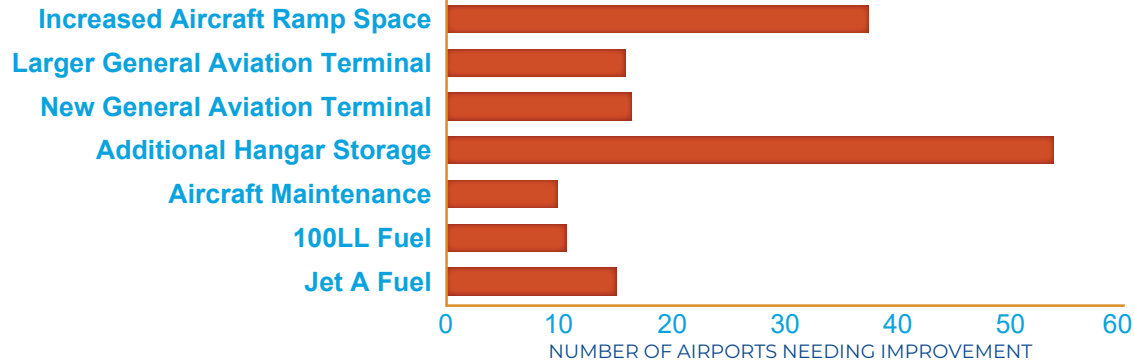
AIRFIELD IMPROVEMENTS



LIGHTING AND APPROACH IMPROVEMENTS



LANDSIDE FACILITIES AND SERVICES



AIRPORT AND SYSTEM IMPROVEMENTS

As individual airports implement projects to achieve their facility and service objectives, these efforts will help elevate many aspects of the system's performance. This section provides an overview of the projects identified by the system plan as being desirable to improve Oklahoma's airport system.





EMERGING AVIATION TECHNOLOGIES

Recently, significant changes in the aviation/aerospace industries have taken place with the rapid increase in popularity of smaller unmanned aircraft systems (UAS). Larger electric vertical takeoff and landing (eVTOL) vehicles, known collectively as Advanced Air Mobility (AAM) aircraft, are also evolving to transport people and cargo. As new technologies emerge, much is still to be determined as to how public airports will accommodate the new air transportation entrants. Research is underway that will provide guidance to airports to help position them to integrate these new technologies.

As facility and infrastructure needs are identified for UAS/AAM, Oklahoma's system plan will be updated to ensure airports are able to accommodate a wide variety of operators. UAS are being used within large distribution centers to improve efficiency and are also being used to deliver small packages, particularly medical and emergency supplies, to remote areas. eVTOL aircraft are expected to be certified by the mid-2020s and will likely use existing airport infrastructure and newly developed vertiports. Oklahoma airports should coordinate with OAC and other stakeholders to accommodate the needs of all electric or hybrid powered aircraft.

Oklahoma is a leader in the UAS/AAM sectors and is recognized nationally as a hub for the testing, development, and integration of new aviation technologies. Oklahoma has established UAS-friendly policies. In 2022, a Mercatus Special Study (conducted by George Mason University) ranked Oklahoma #1 for its readiness to support and grow drone commerce. In 2021, the Oklahoma Legislature established a UAS Program Office within OAC which serves as a single resource for other state and local agencies to help integrate this new technology as it's adopted across the state.

There are over 3,000 UAS pilots in Oklahoma certified under the FAA's Part 107 regulation, which allows for commercial operation of UAS. The Choctaw Nation of Oklahoma is one of eight organizations nationally participating in the FAA's BEYOND program which focuses on UAS integration. Other organizations focused on UAS include Oklahoma State University, the University of Oklahoma, the Osage Nation, and Fort Sill's Counter-UAS Center of Excellence. OAC will need to strategically plan for UAS/AAM in order to prepare system airports to meet the unique needs associated with this new aviation technology.



BENEFITS OF SYSTEM ENHANCEMENTS

INCREASED ECONOMIC IMPACT FROM INVESTMENT

OAC's economic impact study for the aviation and aerospace industry showed that the state's economy receives **\$10.6 billion** in annual economic benefit from the **108 airports** in the Oklahoma airport system. Quality infrastructure is a key component to ensuring the success of the airport system and for attracting new businesses to critical segments of the overall aviation and aerospace industries. Additional investment in system airports, particularly for pro-growth projects, provides opportunities to attract new aviation businesses and to increase the positive economic impact that stems from the airport system.

INCREASED NUMBER OF BUSINESS READY AIRPORTS

The system plan analysis showed currently there are **42 airports** that meet all characteristics for an NBAA business ready airport. If all facility and services objectives are met, an additional **12 airports** will meet NBAA business ready airport characteristics, bringing the total number of NBAA business ready airports in Oklahoma to **54**. Half of the system airports would have NBAA business ready characteristics.

INCREASED MARGIN OF SAFETY

The system plan identified opportunities to improve the system to increase its ability to meet FAA standards and guidelines. Improvements for controlling RPZs, providing RSAs that meet standards, and clearing 20:1 obstructions in primary runway approaches are all actions which will improve operational safety.

INCREASED OPERATIONAL EFFICIENCY

Recommendations for providing additional precision-like approaches and published approaches have the potential to improve the system's operational efficiency. Additional recommendations for improved runway and taxiway lighting, additional runway end identifier lights (REILs), and additional VGSI will also improve system operational efficiency.

INCREASED ACCESSIBILITY

Recommendations for increased runway lengths have the ability to promote access for a wider variety of aircraft to airports in different parts of the state. Additional weather reporting systems and approach lighting systems have the potential to lower visibility minimums, making it possible to access airports during periods of adverse weather.

INCREASED USER SUPPORT

Many of the Oklahoma airports have services that support their typical user needs. Recommendations from the plan, however, have the ability to increase the number of airports that provide fuel to both based and visiting aircraft. Fuel services are important for most airports to fulfill their role in the state airport system.

POTENTIAL BENEFITS OF SYSTEM ENHANCEMENT



IMPLEMENTATION COSTS



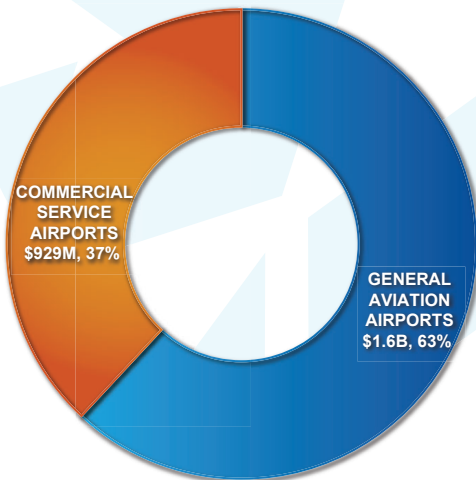
System plan identified projects and costs were combined with airport identified projects and costs. Combining costs from both sources provides a more complete picture of funds that could be needed to maintain and expand Oklahoma airports.

System plan identified and airport identified costs show that a total of **\$2.5 billion** could be required to maintain and enhance airports in Oklahoma over the next 20 years. Further analysis of this estimated investment need shows that **37%** of all estimated costs is associated with the four commercial airports, while the remaining **63%** is associated with the 104 general aviation airports. Of the total estimated 20-year investment need, **26%** is associated with system plan identified projects, while the remaining **74%** is associated with airport identified projects.

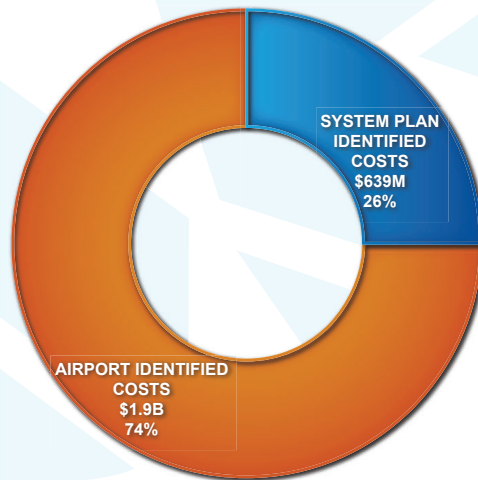
It is also worth understanding which types of projects for the Oklahoma airports will require the greatest level of investment, according to the system plan. The distribution of estimated costs by project type shown below is for projects identified to resolve system plan deficiencies, as they relate to applicable facility and service objectives, as well as airport identified projects. The categories that are anticipated to require the greatest investment are runway/taxiway and pavement strength categories.

ESTIMATED 20-YEAR SYSTEM PLAN IDENTIFIED AND AIRPORT IDENTIFIED COSTS \$2.5 BILLION

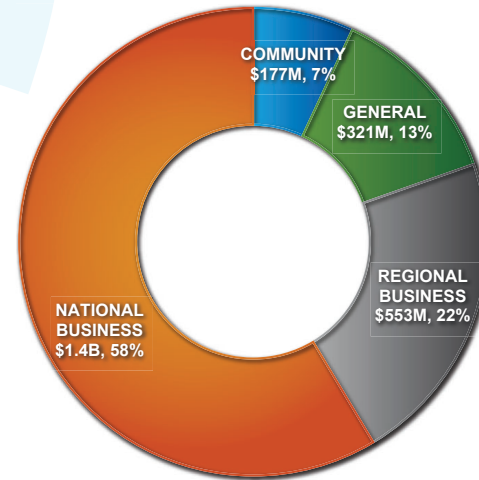
COMMERCIAL AND GENERAL AVIATION AIRPORT PROJECT COSTS



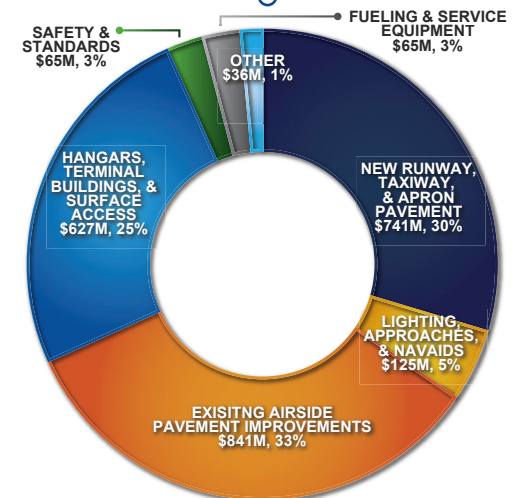
SYSTEM PLAN IDENTIFIED VS AIRPORT IDENTIFIED PROJECT COSTS



PROJECT COSTS BY AIRPORT ROLE



COSTS BY PROJECT CATEGORY

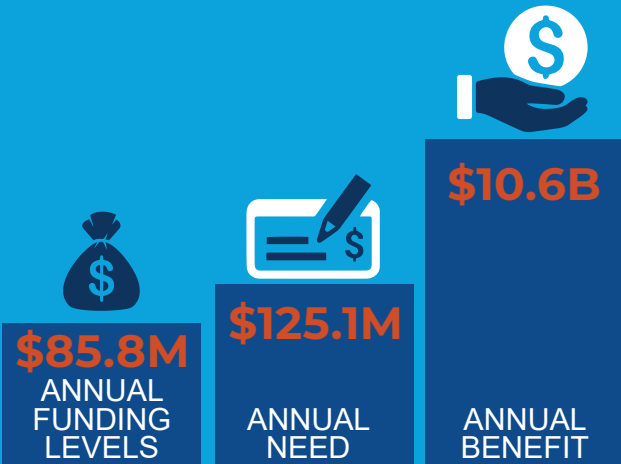


COST VS BENEFITS

The average annual infrastructure funding need for the 108 study airports is estimated at **\$125.1 million**.

At anticipated average annual funding levels of approximately **\$85.8 million**, only **69%** of these capital needs can be met.

The annual economic benefit from the 108 study airports is estimated at **\$10.6 billion**.



AVERAGE ANNUAL INVESTMENT NEEDS

The funding needs for Oklahoma airports will change over time as some projects are implemented and requirements for other projects arise. Based on the 20-year funding need of **\$2.5 billion**, as captured by the system plan, an average annual investment of **\$125.1 million** will be needed to maintain and improve system airports. This average annual investment need includes both system plan identified and airport identified projects.

POTENTIAL FUNDING GAP

Anticipated funding from FAA, OAC, and local sources show **\$1.7 billion** could be available for investment over the next 20 years, or approximately **\$85.8 million** on an average annual basis. This leaves a potential 20-year funding gap of **\$785 million**, or an average funding gap of **\$39.2 million** annually.

NEEDS VERSUS RETURNS FROM OKLAHOMA AIRPORTS

A 2017 statewide economic impact study conducted by OAC shows that annually the 108 commercial and general aviation airports pump an estimated **\$10.6 billion** into the state's economy through payroll and spending they support. When this annual benefit of **\$10.6 billion** is compared to the annual need of **\$125.1 million**, it is easy to see that the economic return that Oklahoma receives from its airport system far out weighs the system's annual financial need. This finding shows that Oklahoma's airports are well worth the investment.





ROLES FOR OKLAHOMA AIRPORTS



➤ NATIONAL BUSINESS

Ada Regional
 Ardmore Municipal
 Bartlesville Municipal
 Clarence E. Page Municipal
 Durant Regional-Eaker Field
 Enid Woodring Regional
 Guthrie-Edmond Regional
 Halliburton Field
 Lawton-Fort Sill Regional
 Muskogee-Davis Regional
 Ponca City Regional
 Shawnee Regional
 Stillwater Regional
 Tulsa International
 Tulsa Riverside
 University of Oklahoma Max Westheimer
 Wiley Post
 Will Rogers World

➤ REGIONAL BUSINESS

Altus/Quartz Mountain Regional
 Alva Regional
 Ardmore Downtown Executive
 Chandler Regional
 Chickasha Municipal
 Claremore Regional
 Clinton Regional
 Clinton-Sherman
 Cushing Municipal
 El Reno Regional
 Elk City Regional Business
 Grove Regional
 Guymon Municipal
 Hobart Regional
 McAlester Regional
 McCurtain County Regional
 Miami Regional
 Mid-America Industrial
 Okmulgee Regional
 Pauls Valley Municipal
 Perry Municipal
 Robert S. Kerr
 Sallisaw Municipal
 Seminole Municipal
 Tahlequah Municipal
 Weatherford Stafford
 West Woodward
 William R. Pogue Municipal

➤ GENERAL

Antlers Municipal
 Atoka Municipal
 Blackwell-Tonkawa Municipal
 Boise City
 Cleveland Municipal
 David Jay Perry
 Fairview Municipal
 Frederick Regional
 Gage
 Hefner-Easley
 Hinton Municipal
 Hollis Municipal
 Hooker Municipal
 Jones Memorial
 Kingfisher
 Madill Municipal
 Prague Municipal
 Purcell Municipal
 Sayre Municipal
 Scott Field
 Skiatook Municipal
 South Grand Lake Regional
 Stan Stamper Municipal
 Stigler Regional
 Stroud Municipal
 Sulphur Municipal
 Thomas Municipal
 Vinita Municipal
 Watonga Regional

➤ COMMUNITY

Anadarko Municipal
 Beaver Municipal
 Broken Bow
 Buffalo Municipal
 Carlton Landing Field
 Carnegie Municipal
 Chattanooga Sky Harbor
 Cherokee Municipal
 Christman Airfield
 Cordell Municipal
 Eufaula Municipal
 Fountainhead Lodge Airpark
 Grandfield Municipal
 Healdton Municipal
 Henryetta Municipal
 Holdenville Municipal
 Hominy Municipal
 Lake Texoma State Park
 Lindsay Municipal
 Medford Municipal
 Mignon Laird Municipal
 Mooreland Municipal
 Okemah Municipal
 Pawhuska Municipal
 Talihina Municipal
 Tenkiller Lake Airpark
 Texhoma Municipal
 Tipton Municipal
 Tishomingo Airpark
 Walters Municipal
 Waynoka Municipal
 Westport
 Wilburton Municipal

Input for this study was obtained from: Oklahoma airport representatives, Oklahoma airport tenants, Oklahoma aviation and aerospace businesses, Oklahoma Universities, the Oklahoma Aeronautics Commission (OAC), the Federal Aviation Administration (FAA), and other public and private sources. Analysis completed in this study was based on information collected between January 2021 and June 2022. The final report was released in October 2022. Preparation of this report was financed in part through a grant from the FAA as approved under the Airport and Airways Improvement Act of 1982. The contents of this report reflect the views of the Consultant Team, which is responsible for the facts and accuracy of the data depicted herein, and do not necessarily reflect the official views or policies of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted herein, nor does it indicate that the proposed development is justified and environmentally acceptable in accordance with applicable public laws

OKLAHOMA AERONAUTICS COMMISSION

 110 N Robinson Ave. Suite 200, Oklahoma City, OK. 73102  405.604.6900  oac.ok.gov

*This publication, printed by Jviation, is issued by the Oklahoma Aeronautics Commission as authorized by Title 3, Section 85 of the Oklahoma Statutes. A total of 500 copies have been prepared and distributed at a cost of \$3.79/copy. Copies have been deposited with the Publications Clearinghouse of the Oklahoma Department of Libraries.