

KANSAS CITY
Aviation

Airport Master Plan

KANSAS CITY DOWNTOWN AIRPORT – WHEELER FIELD

Introduction



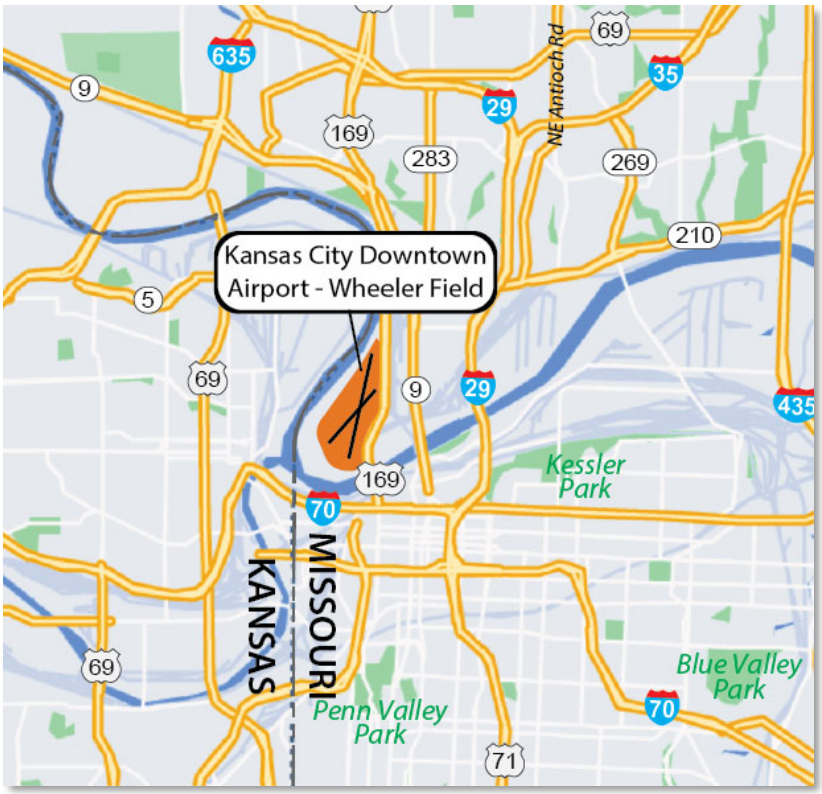
The Kansas City Aviation Department (KCAD) for the City of Kansas City, Missouri owns and operates the Kansas City Downtown Airport – Wheeler Field (MKC). MKC is situated on approximately 590 acres of property located approximately two miles north of downtown Kansas City, at the confluence of the Missouri and Kansas Rivers. U.S. Highway 169 extends along the east side of the airport, connecting to Interstate 29 to the north and Interstates 35 and 70 to the south. MKC serves as a reliever to Kansas City International Airport (MCI) and consistently ranks as one of the busiest airports in the state. The airport primarily serves corporate jet traffic, but it also experiences frequent charter activity, recreational flying, flight training, and cargo operations.

MKC is a vital infrastructure component that supports economic development and quality of life for residents in and around the Kansas City metropolitan area. In addition to serving as an access point for air travelers to the national and international system of airports, the availability of air transport contributes to public safety by supporting police operations, firefighting teams, and air ambulance services.

A master plan is being undertaken for MKC to provide the KCAD with proper guidance for future airport development that will satisfy aviation demands within Kansas City and the greater regional area, while also being wholly compatible with the environment and the communities which surround and support the airport.

WHAT IS A MASTER PLAN?

The Federal Aviation Administration (FAA) recommends that airports update their long-term planning documents every seven to 10 years, or as necessary, to address local changes at the airport. The last master plan update for MKC was completed in 2004, and an airport layout plan (ALP) update with narrative was completed in 2020. The KCAD, the sponsor of MKC, has received a grant from the FAA to update the airport master plan.



The KCAD is responsible for coordinating capital improvements at MKC, as well as obtaining FAA and Missouri Department of Transportation (MoDOT) Aviation development grants. In addition, the KCAD oversees facility enhancements and infrastructure development conducted by private entities at the airport. The **master plan is intended to provide a true vision for how MKC is developed, guidance for future development, and justification for projects** for which the airport may receive funding through an updated capital improvement program (CIP) to demonstrate the future investments required by the KCAD, FAA, and MoDOT Aviation.

The airport master plan follows a systematic approach outlined by the FAA to identify airport needs in advance of the actual need for improvements. This is done to ensure that the KCAD can coordinate environmental reviews, project approvals, design, financing, and construction to minimize the negative effects of maintaining and operating inadequate or insufficient facilities. An important outcome of the master plan process is a recommended development plan, which reserves sufficient areas for future facility needs. Such planning will protect development areas and ensure they will be readily available when required to meet future needs. The intended outcome of this study is a detailed, on-airport land use concept that outlines specific uses for all areas of airport property, including strategies for revenue enhancement.

The preparation of this master plan is evidence that the KCAD recognizes the importance of the airport to the entire region and the associated challenges inherent in providing for its unique operating and improvement needs. The cost of maintaining an airport is an investment which yields impressive benefits to the local community. With a sound and realistic master plan, the airport can maintain its role as an important link to the regional, state, national, and global air transportation systems. Moreover, the plan will aid in supporting decisions for directing limited and valuable KCAD resources for future airport development. Ultimately, continued investment in the airport will allow Kansas City to reap the economic benefits.

Some common questions regarding what a master plan is and is not are answered in the graphic below.

What an Airport Master Plan is:

- A comprehensive, long-range study of the airport and all air and landside components that describes plans to meet FAA safety standards and future aviation demand.
- Recommended by the FAA to be conducted every 7-10 years to ensure plans are up-to-date and reflect current conditions and FAA regulations. The last Master Plan for MKC was completed in 2004.
- Funded by the FAA through the Airport Improvement Program (AIP), which provides 90% of eligible project costs. The remaining costs are funded by the KCAD.
- A KCAD document that will ultimately be presented for approval to the City Council. FAA/MoDOT approve only two elements of the Master Plan, the Aviation Demand Forecasts and the Airport Layout Plan (ALP drawing set).
- An opportunity for airport stakeholders and the general public to engage with airport staff on issues related to the airport and its current and future operations, and environmental and socioeconomic impacts. Three (3) public information workshops will be conducted throughout the Master Plan process to facilitate this public outreach effort.

What an Airport Master Plan is not:

- A guarantee that the airport will proceed with any planned projects. Master Plans are guides that help airport staff plan for future airport development; however, the need/demand for certain projects might never materialize.
- A guarantee that the KCAD, MoDOT, or the AIP will fund any planned projects. Project funding is considered on a project-by-project basis and requires appropriate need and demand. Certain projects may require the completion of a benefit-cost analysis.
- Environmental clearance for specific projects. The Master Plan includes an environmental overview that identifies potential environmental sensitivities per the National Environmental Policy Act of 1969 (NEPA) guidelines. Most planned projects will require a separate NEPA study (environmental impact statement/environmental assessment/categorical exclusion) prior to construction.

WHO IS PREPARING THE MASTER PLAN?

The KCAD has contracted with the airport planning firm of Coffman Associates, Inc. to undertake the airport master plan. Coffman Associates is an airport consulting firm that specializes in master planning and environmental studies. Coffman Associates will lead the planning team, with support from the following firms:

- **Aeroplex Leasing** | Conducting a general aviation (GA) area hangar and facilities analysis;
- **Crawford, Murphy & Tilly, Inc. (CMT)** | Engineering support primarily to offer insights into facility requirements, engineered material arresting system (EMAS) and airfield development alternatives, and estimates of probable costs;
- **Lean Engineering** | Instrument approach feasibility analysis
- **Anderson Surveying** | Boundary survey and easement review
- **Kimley Horn** | Economic benefit report
- **Landry Consultants** | Safety Risk Management (SRM)
- **Martinez Geospatial** | Aerial photography, ground survey, and GIS products to meet FAA 5300-18B requirements for Airports GIS data submittal.

The airport master plan update will be prepared in accordance with FAA requirements, including Advisory Circular (AC) 150/5300-13B, *Airport Design*, and AC 150/5070-6B, *Airport Master Plans*. The plan will be closely coordinated with other planning studies relevant to the area and with aviation plans developed by the FAA and MoDOT Aviation. The plan will also be coordinated with the City of Kansas City, as well as other local and regional agencies as appropriate.

GOALS, OBJECTIVES, AND ASSUMPTIONS

The primary goal of this master plan is to provide the framework needed to guide future airport development that will cost-effectively satisfy aviation demand, while also considering potential environmental and socioeconomic impacts. Accomplishing this goal requires an evaluation of the existing airport to decide what actions should be taken to maintain a safe, adequate, and reliable facility. A long-range planning study also requires several baseline assumptions that will be used throughout the analysis. Specific objectives and assumptions for this study are as follows:

OBJECTIVES

- Runways 1-19 and 4-22* length eligibility and justification analysis
- Evaluate the potential to for instrument approach to Runway 1, factoring in planned development adjacent to MKC
- Consider solutions for the Runway 4-22*/Taxiway G intersection (designated by FAA as Hotspot 1)
- Analyze solutions for and prioritization of geometry corrections to the intersection of Taxiways D and L (designated by FAA as Hotspot 2)
- Address all airfield geometry complexities to ensure FAA standards are achieved, where practical
- Evaluate all runway and taxiway safety areas and analyze options for correcting non-standard conditions
- Completion of an updated, AGIS-compliant aeronautical survey, in accordance with AC 150/5300-18B standards
- Completion of a 1A boundary survey
- Obstruction analysis to develop a realistic Obstacle Action Plan (OAP) utilizing the Runway Airspace Mitigation (RAM) tool
- Review Runway 1-19 Engineered Materials Arresting System (EMAS) to present life cycle analysis, maintenance, and replacement timing
- Evaluate development options on the airport's west side, in conjunction with the planned construction of Taxiway L
- Consider redevelopment options for aging landside facilities
- GA expansion planning (hangars, taxilanes, and apron)
- Consider potential impacts to ATCT line-of-sight during landside development analysis
- Develop a new Exhibit A - Airport Property Inventory Map per FAA's Standard Operating Procedures (SOP) 3.00 requirements.
- Incorporate sustainability and environmental best practices into recommended plans, including the potential for incorporating a solar power source.
- Locate potential areas where eVTOL and Advanced Air Mobility (AAM) activities and facilities are best suited
- Analyze MKC's economic benefit and impact
- Maintain a fully transparent process wherein all airport stakeholders and the public can be involved

ASSUMPTIONS

- MKC will continue to accommodate the diverse needs of general aviation users, including unscheduled Part 139 air carrier and taxi operations, cargo, and military operators.
- The aviation industry will develop through the planning period as projected by the FAA. Specifics of projected changes in national aviation industries are described in Chapter Two – Aviation Demand Forecasts.
- The socioeconomic characteristics of the region will generally change as forecast (see Chapter Two).
- A federal and state airport improvement program will be in place through the planning period to assist in funding future capital development needs.

*Runway 3-21 will change to Runway 4-22 in summer 2023. All references to this runway will be to Runway 4-22.

MASTER PLAN ELEMENTS AND PROCESS

The master plan has 15 elements that are intended to assist in the evaluation of future facility needs and provide the supporting rationale for their implementation. **Exhibit iA** provides a graphical depiction of the process involved with the study.

INITIATION
- Goals and Objectives
- Project Website
- Planning Advisory Committee

PAC #1

INVENTORY
- Airport Facilities
- Airspace and Air Traffic Activity
- Airport Access and Parking, Utilities, and Aerial Photography
- Area Socioeconomic Data
- Local Planning and Land Use
- AGIS Survey

FORECASTS
- Based Aircraft and Fleet Mix
- Annual Operations
- Peaking Characteristics
- Critical Aircraft Analysis

PAC #2

Working Papers

FACILITY REQUIREMENTS
- Design Categories
- Runway Length and Strength
- Support Facilities
- Taxiways
- Airfield Capacity
- Hangar Facilities
- Terminal Building
- Aprons
- Navigational Aids

PW #1

AIRPORT ALTERNATIVES
- Evaluate Development Scenarios
  - Airside
  - Landside
  - Support

PAC #3

Working Papers

RECOMMENDED DEVELOPMENT CONCEPT AND CAPITAL FINANCIAL PLAN
- Detailed Facility and Land Use Plans
- Cost Estimates
- Funding Sources
- Airport Capital Improvement Plan

PW #2

ENVIRONMENTAL CONSIDERATIONS
- Noise Exposure
- Recycling Plan
- Height/Hazard
- Review/Evaluation of NEPA Environmental Categories

PAC #4

Working Papers

AIRPORT LAYOUT PLANS
- Airport Layout Plan
- Landside Drawing
- Airspace/Approach Drawings
- On-Airport Land Use Plan
- Property Map
- Land Use Plans

PW #3







PAC: Planning Advisory Committee
PW: Public Workshop

Element 1 – Study Initiation and Organization includes the development of the scope of services, schedule, and study website. The Planning Advisory Committee (PAC) is also established at this stage, consisting of airport stakeholders to serve in an advisory capacity throughout the master plan process. General background information will be established that includes outlining the goals and objectives to be accomplished during the master plan.

Element 2 – Inventory of Existing Conditions is focused on collecting and assembling relevant data pertaining to the airport and the area it serves. Information is collected on existing facilities and operations. Local economic and demographic data is collected to define the local growth trends, and environmental information is gathered to identify potential environmental sensitivities that might affect future improvements. Planning studies which may have relevance to the master plan are also collected.

Element 3 – AGIS 18B Survey/Obstruction Analysis includes the development of new aerial mapping (topographic/planimetric) of the airport and the surrounding environs. Based on the data received, an Obstacle Action Plan (OAP) will be developed that includes mitigative actions for obstacles that could impede safe air navigation.

Element 4 – Aviation Demand Forecasts examines the potential aviation demand at MKC. The analysis utilizes local socioeconomic information, as well as national air transportation trends to quantify the levels of aviation activity which can reasonably be expected to occur at MKC over a 20-year period. An existing and ultimate critical design aircraft, based upon AC 150/5000-17, *Critical Aircraft and Regular Use Determination,* is also established to determine future planning design standards. The results of this effort are used to determine the types and sizes of facilities which will be required to meet the projected aviation demand at the airport through the planning period. This element is one of two elements that are submitted to the FAA for approval.

Element 5 – Facility Requirements determines the available capacities of various facilities at the airport, whether they conform with FAA standards, and what facility updates or new facilities will be needed to comply with FAA requirements and/or projected 20-year demand.

Element 6 – Airport Development Alternatives considers a variety of solutions to accommodate projected airside and landside facility needs through the long-term planning period. An analysis is completed to identify the strengths and weaknesses of each proposed development alternative, with the intention of determining a single direction for development. The airspace around MKC will also be evaluated during this element, with the intention of documenting the feasibility of a future instrument approach procedure to Runway 1. Consideration of including facilities to accommodate Advanced Air Mobility (AAM) and Electric Vertical Takeoff and Landing (eVTOL) aircraft will also be included within Element 6.

Element 7 – Recommended Master Plan Concept provides both a graphic and narrative description of the recommended plan for the use, development, and operation of the airport. This includes both airside and landside recommendations, as well as on-airport land use classifications.

Element 8 – Capital Improvement Program (CIP) and Financial Plan recommends a 20-year capital program for MKC, analyzing the benefits and costs associated with the recommended plan. Specific costs are established for each project, ensuring logical staging of improvements. Potential funding sources are also identified, as well as a financial plan that focuses on overall annual operating revenues and expenses.

Element 9 – Land Use Compatibility Analysis uses the data acquired in Element 3 to analyze land uses adjacent to MKC from a compatibility standpoint. This includes the development of noise exposure contours based on recent flight track data and projected operational outcomes. Land use management techniques will be identified as well as obstruction mitigation strategies to ensure protection of MKC and the surrounding airspace.

Element 10 – Environmental Evaluation includes a baseline environmental inventory, with consideration given to resource categories within FAA Order 1050.1F, *Desk Reference*. Additionally, a recycling plan and environmental overview will be prepared that will identify potential environmental issues associated with the recommended concept, including mitigation measures that may be necessary for proposed projects.

Element 11 – Airport Layout Plans is the preparation of the official Airport Layout Plan (ALP) drawings based on the recommended development concept. The ALP set is used by the FAA in determining grant eligibility. This element is the second element of the study that is submitted to the FAA for approval. The ALP will be developed in accordance with FAA's SOP 2.00, *Standard Procedure for FAA Review and Approval of Airport Layout Plans*.

Element 12 – Exhibit A Property Map is the preparation of a full airport boundary survey, including research and review of airport property deeds and easements.

Element 13 – Public Involvement includes meetings with the PAC as well as other public/administrative presentations. These meetings are planned at various project milestones in order to update airport stakeholders on the progress of the master plan as well as request input from the committee regarding development of the planning study. Additionally, public information workshops are planned to educate and connect with the public to ensure an open and transparent planning process.

Element 14 – Project Management ensures that a project of this magnitude remains on schedule, through regular communication, coordination of various project-related activities (i.e., surveys, on-site evaluations, etc.), and preparation of progress reports.

Element 15 – Approvals and Final Reports provide documents which depict the findings of the study effort and present the study and its recommendations to appropriate local organizations. The final document incorporates the revisions to previous working papers prepared under earlier elements into a usable master plan document, approved at both the local and federal levels.

COORDINATION AND OUTREACH

This study is of interest to many within the local community and region. This includes local citizens and businesses, community organizations, city officials, airport users/tenants, and aviation organizations. As a component of the regional, state, and national aviation systems, MKC is of importance to both state and federal agencies responsible for overseeing the air transportation system.

To assist in the development of the master plan, a Planning Advisory Committee (PAC) has been established to act in an advisory role. PAC members will meet up to four times at designated points during the study to review study materials and provide comments to help ensure that a realistic, viable plan is developed.

Draft working paper materials will be prepared at various milestones in the planning process. The working paper process allows for timely input and review during each step within the master plan to ensure that all issues are fully addressed as the recommended program develops.

A series of three open-house public information workshops is also planned as part of the study coordination and outreach efforts. Workshops are designed to allow all interested persons to become informed and provide input concerning the master plan process. Notices of meeting times and locations are advertised through local media outlets. All draft working papers, reports, meeting notices, and materials will be made available to the public on a study-specific website: www.mkc.airportstudy.net.

SWOT ANALYSIS

A SWOT analysis is a strategic business planning technique used to identify **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats associated with an action or plan. The SWOT analysis involves identifying an action, objective, or element, and then identifying the internal and external forces that are positively and negatively impacting that action, objective, or element in a given environment. A SWOT analysis was conducted at the first PAC meeting, the findings of which are summarized in **Table iA**.

Table iA | MKC SWOT Analysis

STRENGTHS	• MKC offers a 2-runway system capable of serving multiple categories of users/demand groups • Taxiway L will be constructed in Summer 2023, improving efficiency and eliminating Hot Spot #2 • Excellent location (large catchment area; good highway access; accessibility to entertainment/amenities) • Very supportive of business aviation, which is a rapidly growing segment of the industry • Major economic contributor • Excellent support from local government and KCAD; good communication between KCAD and MKC staff	• Snow removal capability ensures airport remains operational during poor winter weather conditions • Tower operates 24/7 • ARFF and emergency response capability • U.S. Customs office • Important to aviation and local Kansas City history; airport is nearly 100 years old • On-airport aviation museum • Two FBOs providing services • High rep operators (ATP, ATD, Central Air) • Tower height/visibility
WEAKNESSES	• Aging tower (constructed in early 1980s); tower location/visibility with Taxiway L when constructed • Limited development potential on existing property • FAA Hot Spots • Landlocked due to Missouri River and downtown business district • Obstruction-rich environment • Lack of public transit at airport • Existing instrument approach capabilities (visibility minimums not lower than ¾-mile; no approach to Runway 1) • Difficulty in accessing airport due to existing road network (confusing for those unfamiliar with airport); lack of wayfinding/signage	• Railroad adjacent to property line • Age of airport/facilities • U.S. Customs office not regularly staffed • No sustainable aviation fuel available • Lack of services and non-industrial development in the area • Shortage of pilots, mechanics, and schedulers • Limited airport conveniences, on-site restaurant, public viewing areas • Majority of property is leased by one FBO • Hangar availability • Not suitable for reaching all global markets
OPPORTUNITIES	• Hangar development, particularly around Taxiway L • Expanding global reach (Europe primarily) • Instrument approach to Runway 1 • Improved highway access • AAM/eVTOL, electric charging stations • Development opportunities beyond MKC property • FAA funding reauthorization/BIL funding opportunities • Improved marketing potential • Growth in business aviation (Part 135, 91k) • On-airport restaurant • Observation areas for viewing	• U.S. Customs to support international users • Increased economic impact and output • Virtual tower and ramp control • Sustainable aviation fuel • Public transit potential at airport (coordinate with KCATA/RideKC) • Redevelopment of existing landside facilities • Improved security/fencing • Downtown development; city is completing new Comprehensive Plan that will tie in MKC Master Plan • Improved wayfinding/signage
THREATS	• New taxiway/hangar development could impede tower visibility • Vertical development downtown could create airspace issues and impact existing/new approaches • Encroaching development all around • National pilot shortage; general labor shortage • Reduced funding availability; inflation • Evolving FAA standards	• Increased UAV activity can result in obstructions and hazards to flight • Flooding potential due to location in floodplain • Railroad impedes growth potential • State legislative actions that might reduce access to funding • Expansive pavements • Funding eligibility for some pavements and buildings