

## **CHAPTER 1**

### **INTRODUCTION**

#### **OVERVIEW**

Blue Grass Airport (LEX) has provided Lexington-Fayette Urban County citizens, as well as a significant portion of north central Kentucky, with their connection to an array of major airline hubs and the domestic and international markets they serve. Additionally, the Airport has continued as a key component in the economic and business growth within Lexington-Fayette Urban County and the surrounding jurisdictions that form the seven-county Lexington Metropolitan Statistical Area. Since commencing aviation services in 1927, the Airport and the aviation industry have faced many challenges and changes. A key element of meeting these challenges and preparing for the impact of potential future changes is to flexibly plan to meet the challenges of the future both from an aviation perspective as well as from the potential impact that other growth may pose on the long-term viability of LEX.

To this end, in 2001, the Lexington-Fayette Urban County Airport Board (LFUCAB) initiated an update of the last Airport Master Plan that was prepared in 1995. This earlier planning effort identified a number of airport improvements that were needed. Not the least of these consisted of developing an additional runway to provide a redundant commercial runway, to address safety considerations associated with nonstandard runway safety areas (RSA), and to enhance future airport capacity. A parallel runway alignment has been incorporated in some form into every Airport Master Plan since 1974. The actions of LFUCAB as it relates to proposed improvements on Runway 4-22 to provide significant expansion to the required RSAs has addressed for a time one potential rationale for constructing a parallel runway at LEX. Considerable time and attention has been expended relative to the issues surrounding a proposed future runway at LEX. The current Master Plan Update envisioned by LFUCAB will reconsider the issue of demand for an additional runway with specific attention being focused on when such an improvement might be needed. If it is not required for an extended period of time, this study will identify what actions, if any, should be considered to preserve options or potentially consider the alternative of one day developing a new airport at a new location to meet future aviation demands. Because of this mandate, consideration has been given to extending portions of the analysis beyond the typical 20-year planning horizon normally used in airport master plans.

This Airport Master Plan Update process and all of its elements have been conducted consistent with the requirements of the Federal Aviation Administration (FAA). Furthermore, the plan addresses the goals, key issues, and objectives of LFUCAB, which is the official airport sponsor. As such, certain elements of the planning process have been given priority for analytical purposes earlier in the overall study than normal. The issue of runway demand and development timing is being addressed early in the process prior to moving into other elements of the study such as general aviation facility needs. The planning approach at Blue Grass Airport also analyzes the implications and requirements associated with the possible development of a new airport at an alternative location in the Lexington vicinity. It provides detailed data on the issues and requirements that LFUCAB would have to address should such a course of action be undertaken. As an example, since the passage of the National Environmental Protection Act in 1969 there have only been five new commercial airports of any consequence constructed in the United States. Thus, addressing environmental considerations is a significant element of moving to a future alternate location.

A Terminal Area Study was conducted in unison and coordinated with this Master Plan Update. The Terminal Area Study consists of an in-depth analysis of existing facilities and the identification of needed expansion and/or reconfiguration of existing terminal facilities to meet anticipated passenger demands. Additionally, the terminal study addressed the changes in facility requirements and the evolving security requirements stemming from the events of September 11, 2001. Upon completion of the runway-related analyses and the terminal planning study,

## Master Plan Update

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the Master Plan Update comprehensively analyzes the current aviation facility and develop planning recommendations for the remainder of the uses and facilities that comprise LEX, including, but not limited to: General Aviation (GA) facilities, Fixed-Base Operator (FBO) facilities, taxiways, corporate facilities, air cargo areas, airport maintenance, Airport Rescue and Firefighting (ARFF) facilities, parking lots, and airport access. The Master Plan Update also includes the preparation of a financial plan and an Airport Layout Plan (ALP) drawing set that meets FAA criteria.

## STUDY GOALS

Primary goals of this update is to realistically define the current and future aviation demand at LEX, develop cost effective options to address this demand, and delineate the role of the Airport in the local, regional, and national aviation system. The Master Plan Update provides the sponsor with a comprehensive overview of the airport's needs over the next 20 years, and in the case of certain elements of this effort, beyond that timeframe. This analysis includes recommendations as to the timing of proposed development based on appropriate activity triggers or benchmarks, costs for this development, and methods of financing the development program. Key to the planning efforts that are proposed in the Master Plan Update is the development of an extensive public process to investigate community opinions and goals relative to LEX and its future development. While LFUCAB has undertaken airfield improvements designed to address runway safety issues that were one key factor in the need for an additional runway at LEX, the other factors require reevaluation. Several issues remain to be examined relative to the long-term role of the Airport in the community and the rationale of protecting the current investment in facilities at the existing airport site versus developing elsewhere. This planning effort is intended to facilitate answers to these issues as well as to the more typical capital development issues normally addressed in planning efforts.

Blue Grass Airport, like many similarly sized airports, has experienced changes in the level of aviation service and in the type of aircraft used to serve the area's traveling public. A relatively recent trend is the expanding role of regional jets to provide service to markets previously served with smaller turboprop aircraft as well as larger mainline jets. As a result of the terrorist attacks on September 11, 2001, airlines have reconsidered how they serve their markets in much the same way they did in the wake of the Persian Gulf War and the recession that occurred between 1990 and 1992. Regional jets manufactured by Avro, Canadair, Dornier, and Embraer with seating ranges between 37 to 70 passengers have come to dominate the regional commuter airline industry and are currently expanding their role in serving the passenger demand at Blue Grass Airport. This trend is anticipated to continue well into the future and have an impact on an array of airports throughout the United States.

Introduction or expansion of regional jet service can have very positive impact in a community by providing access to new hubs across the United States, allowing passengers a wider range of destination and connecting hub choices. The experience at Blue Grass Airport has been similar. Recently, Continental Express started service with regional jets providing new non-stop service to their hub in Newark, New Jersey. Regional commuter service also has resulted in increased frequency of service to markets and this is particularly the case in Lexington. Due to these changes, many airports have had to re-examine their terminal buildings and terminal area to meet the demands that higher frequency service has created. This higher frequency of service can also be a factor in the adequacy of airfield facilities to accommodate demand in an efficient manner. These impacts

Another issue, arising as a direct result of the 9/11, is the need to comply with FAA and Transportation Security Administration (TSA) directives to improve the screening of checked baggage at the nation's airports. These new security measures have required immediate attention, and LFUCAB has taken a very proactive approach to addressing security needs and moved quickly to be one of the initial airports to have a full plan for complying with explosives detection requirements for luggage. LEX has been examined with respect to these new security measures prior to many of the tasks associated with the Master Plan Update so as to facilitate TSA compliance at

LEX. These analyses included consultation regarding explosive detection system (EDS) equipment; facility requirements associated with this equipment and new screening procedures; and needed building modifications required to accommodate the EDS equipment, TSA staff and the public, as necessary.

### **OBJECTIVES OF THE MASTER PLAN UPDATE**

The primary objective of the Airport Master Plan is to articulate the community's issues, goals, and needs relative to Blue Grass Airport and to provide the best options to meet future changes in aviation demand as well as regulatory requirements. The Master Plan process focuses on developing an attainable phased development program to satisfy airport needs in a safe, efficient, economical, and environmentally sound manner. The plan serves as a guide to decision makers, airport users, and the public concerning realistic and achievable airport development in line with both airport and community objectives. The Master Plan process also provides a forum for discussing airport and community objectives and identifying linkages between community goals and those of the airport.

While not an exhaustive list of all elements to be analyzed throughout the planning process, specific key issues identified by LFUCAB for consideration in the Master Plan Update are delineated below:

- Analysis of ground access to existing and future airport development areas with emphasis on minimizing impacts to the accessibility of existing airport uses and future on-airport development areas. This analysis should consider existing and future security requirements.
- Identification of the implications, potential costs, environmental impacts, and development-related requirements associated with the replacement of existing facilities at a new location capable of meeting existing and projected future demand.
- Consideration of a "Greenfield airport development option" as an alternative to the development of a new runway alignment at Blue Grass Airport at some point in the future.
- Definition of the need, if any, for a future additional runway, its configuration, operational capability, and the timing of the need for this runway.
- Definition of the cost-benefit relationships and the viability associated with the provision of future additional runway facilities at LEX.
- Compatible land use considerations adjacent to the Airport that act to influence the location and configuration of potential future airfield facilities.
- Develop and assist LFUCAB and the County with establishing a local zoning overlay or other appropriate means for protection of property required for potential future airfield facilities.
- Identification of future aviation development areas within the current boundaries of the airport.
- Development of a proactive public outreach program to actively involve the public and ensure the provision of detailed and accurate information in a manner that the general public can understand.
- Development of a consensus relative to the future airport facility needs and actions to meet the future demand.
- Identification of environmental factors that may act to limit or guide the development of airport property.
- Development of options to address key deficiencies in the existing terminal area and terminal building that may include the redevelopment of some existing terminal building areas as well as the development of additional terminal space and expanded facilities. These options should address the following related to the terminal area:
  - Analyze of surface and deck parking;
  - Consider terminal interior reuse and expansion;
  - Enhance efficiency and use of underutilized space in terminal;
  - Plan for long-term growth;

- Analyze aircraft apron parking;
- Address increased security and other facility requirements;
- Enhance the revenue generation of concession facilities; and
- Minimize cost exposure to LFUCAB while maximizing benefits.

## MASTER PLAN PROCESS

Development of an Airport Master Plan proceeds through a series of specific steps that are generally defined by the FAA but allow the planning process to be responsive to specific airport and community issues. The steps in the master planning process are briefly described in the following sections.

### Airport Inventory

The Inventory process is the initial step in the plan development and provides information about existing airport facilities, including characteristics of the existing runway and taxiways, airport access, property holdings, airport users, airport services, hangars, and aircraft parking aprons. The Inventory also collects information related to the community such as population changes, land use, development trends, changes in employment and income, and future trends in the area that may impact the Airport and the traffic that frequents it. The Inventory provides the foundation on which all subsequent sections of this Master Plan are based.

### Aviation Activity Forecasts

Planning for the future requires that a reasonable and defensible projection of future demand be developed. Existing forecasts will be reviewed in detail and alternate projections may be generated using historic economic trends and historic activity. These Aviation Forecasts account for the impact of 9/11 on future activity levels. Various techniques, including mathematical, market share, and trend-related projection techniques, were explored to develop a realistic estimate of the future passenger activity, aircraft types (fleet mix), number of based aircraft, and the total number of aircraft operations (landings and takeoffs) will be explored. The Forecasts provide airport activity benchmarks for determining the adequacy of existing airport facilities in meeting current demand and the level of passenger and operational activity that can be expected in the future.

### Airfield Demand/Capacity Analysis

Each airport has an upper limit on the number of aircraft operations that the runway and taxiway system can accommodate. This upper limit is referred to as the airfield capacity. Airfield capacity is evaluated both on an hourly and annual basis for the runway/taxiway system. The Demand/Capacity Analysis seeks to identify the capacity of the airfield and define what improvements, if any, may be needed to meet future demand. In the case of Blue Grass Airport, this Airfield Demand/Capacity Analysis will also focus on the determination of the future level of delay that will likely be incurred and the cost of this delay to airport users as expressed in terms of aircraft operating block hour costs. Identification of delay costs will provide LFUCAB with a decision making tool for use in considering potential airfield improvements.

### Facility Requirements Analysis

The Facility Requirements Analysis compares existing airport facilities (such as runways, taxiways, terminal space, navigational aids, hangars, and aircraft parking aprons) against what may be needed to meet current and future levels of passenger and aircraft activity. Using this comparison, it is possible to identify where a deficiency or excess capacity exists relative to an airport area or facility. The output of this part of the Master Plan is a “wish list” of facility improvements that the Airport should, if feasible, try to provide.

### **Airport Alternatives Analysis**

The Alternatives Analysis identifies reasonable alternatives that the Airport might pursue to meet the Facility Requirements. The options considered in the Alternatives Analysis could range from only minor alterations to major reconfigurations of LEX or of specific airport facilities and property areas. The Alternatives Analysis in this Master Plan Update addresses all elements of the Airport, but focuses in detail on issues affecting the airport terminal area due to the changes in the aviation industry that were previously mentioned. This involves addressing code-related deficiencies, provide a desirable image of the community in the terminal, and address potential impacts associated with increased operations by regional commuter jets.

### **Airport Layout Plans**

Associated with the Master Plan for Blue Grass is the preparation of a series of drawings depicting the existing airport and any proposed changes to the facility over the next 20 years. This set of drawings is called the Airport Layout Plan (ALP) set. For a future airport improvement to be eligible for federal funding assistance, it must be depicted in the ALP set and approved by the FAA.

### **Implementation Plan**

The projected financial plan and the Capital Improvements Program (CIP) as presented in the Implementation Plan are key tools for local decision makers. The Facility Requirements identifies what is needed and the Alternatives Analysis identifies the most viable manner of meeting these needs. The Implementation Plan identifies project costs, sources of funding, and the timing of required improvements. Additionally, it quantifies those items eligible for federal and state funding and those that require funding using Passenger Facility Charges, local monies, or public/private partnerships as well as private sources.

## **SUMMARY**

Working with aviation industry specialists, local leaders, interested and in some cases affected parties, and the general public, the master planning process intends to define what aviation-related trends may be expected in the Lexington community. This process leads to reasonable recommendations for improvements to LEX so that LFUCAB can consider these in their decision-making and can be positioned to take advantage of future opportunities. This study takes a detailed look at the issues noted above as well as any other considerations that arise over the course of the study, potentially impacting both the Airport and the community at large. Blue Grass Airport has a long and important history in the aviation industry and of serving the needs of the local community. It is the link to the nation and the world for Lexington area businesses and citizens. LEX also serves as the hub for an expanding center of business and industrial development and is a key component in ongoing economic development efforts by local and regional leaders to promote the community to prospective business. Thus, regardless of whether one flies or not, the Airport provides a direct and positive benefit to all residents of the Lexington area.