

# *Appendix A*

---



## **Aviation Demand Analysis**



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Memphis Airports District Office  
2862 Business Park Dr, Bldg G  
Memphis, Tennessee 38118-1555  
Phone: 901-322-8185

August 3, 2012

Mr. Mark Day, A.A.E.  
Director, Engineering and Maintenance  
Lexington-Fayette Urban County Airport Board  
4000 Terminal Drive, Suite 206  
Lexington, KY 40510

Aviation Demand Forecast  
Master Plan Update  
Lexington Bluegrass Airport (LEX)

Dear Mr. Day:

We have reviewed your Master Plan Forecast submitted April 4, 2012. Based on the justification report submitted July 11, 2012 we find the Forecast consistent with the 2011 FAA Terminal Area Forecast (TAF). Based on this finding the Master Plan Forecast is approved for use. Should you have any questions, please feel free to contact me at (901) 322-8185.

Sincerely,

Stephen Wilson, Community Planner  
Memphis Airports District Office

Cc: James Williams, Program Manager

# Lexington Blue Grass Airport

## 2012 Airport Master Plan Update

### *Forecast Summary for Passenger Enplanements*

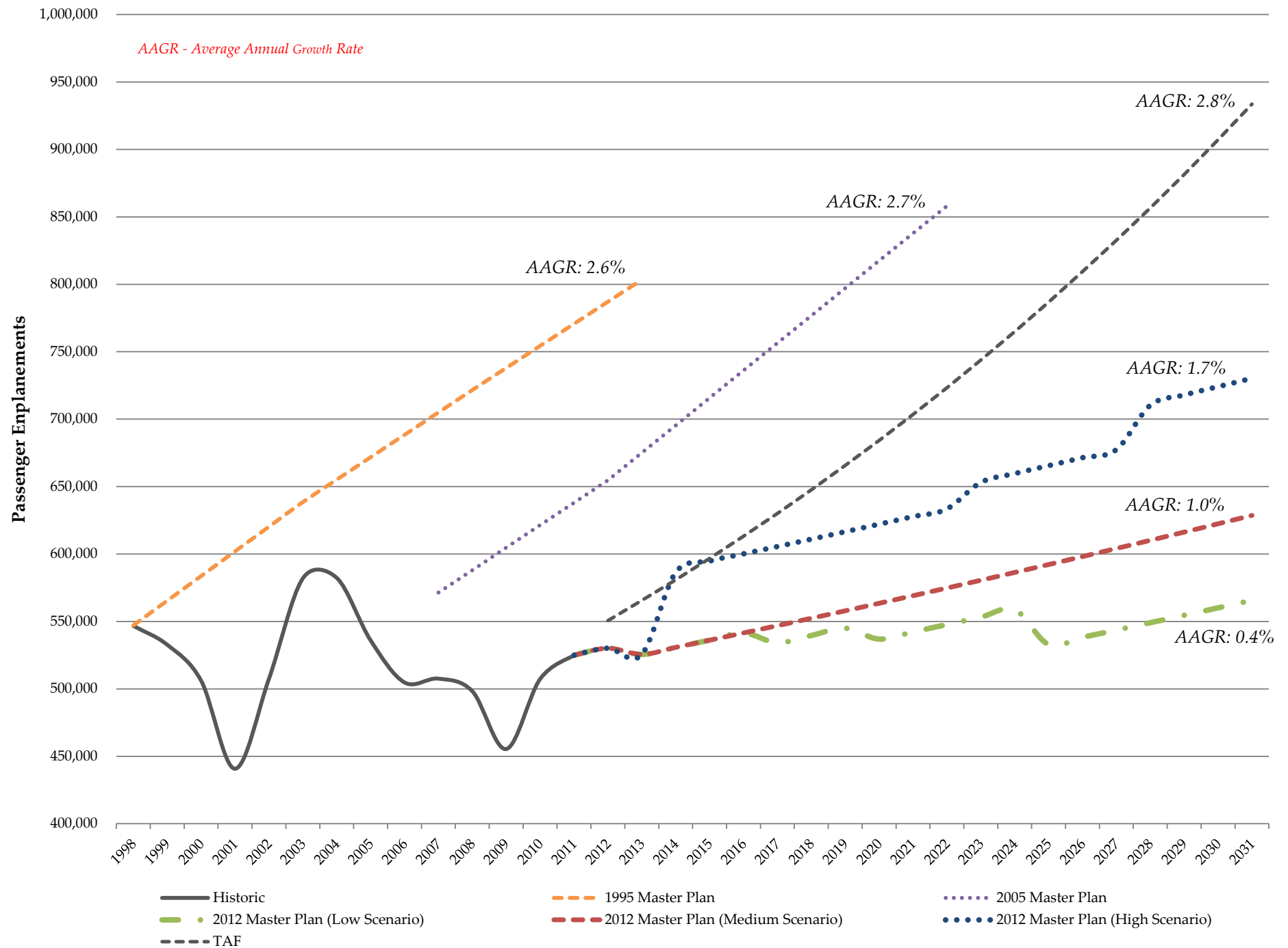
July 6, 2012

---

1. Demand projections for passenger enplanements were developed using a **Market Based Approach** supported by a three (3) tiered process:
  - a. 2011 Passenger Leakage Study
    - i. Identified the Lexington catchment area which generated approximately 940,000 bookings
    - ii. Utilized a new data source to determine the location (zip code) a passenger originates from and the airport utilized for their trip
    - iii. **Analysis – Lexington Retains Approximately 55% of Catchment Area Bookings**
  - b. Air Service Trends
    - i. Conducted an analysis of air service trends at Lexington over a 10-year period
    - ii. A number of industry metrics were analyzed (*load factors, yields, route structures, hub strategies, seats available, carrier types, etc.*)
    - iii. Domestic & International Demand (*Passengers, Revenue, Destinations, Etc.*)
    - iv. Identified existing air service routes which may be at risk given performance
    - v. **Historic Annual Growth Rate = 1.0% (six year period)**
  - c. Air Service Scenarios
    - i. Utilized the historic annual growth rate in each scenario as the baseline
    - ii. Developed three (3) air service scenarios based on current and projected airline industry trends (*hub strategies, aircraft fleets, consolidation, fuel prices, etc.*)
    - iii. Each air service scenario identified trigger events based on our best knowledge of airline trends and strategies
2. Forecast Considerations
  - a. Lexington Fleet Mix
    - i. Primarily Regional Jet (RJ) Equipment to Airline Hubs
    - ii. High Sensitivity to Fuel Prices & Service Agreements from Regional Carriers

- iii. Example: Delta (Lexington's Largest Carrier) announced on June 7<sup>th</sup> that a deal with its pilot union was reached which will result in the removal of 218 regional jets systemwide
  - b. Fuel Prices - Significant impact on route profitability
  - c. Route Performance
  - d. Airline Capacity
  - e. Low Cost Carrier (LCC) Strategies
  - f. Network Carrier Consolidation
  - g. Competition at Surrounding Airports (*Louisville, Nashville, Columbus, Cincinnati*)
3. Medium Forecast Scenario
- a. Assumes relatively flat capacity in Lexington Market
  - b. Reduction in aircraft movements associated with larger gauge aircraft
  - c. No significant changes to the number of network carriers
    - i. Recent announcement by U.S. Airways considering merger with American Airlines
  - d. Assumes Allegiant backfills AirTran capacity to Orlando market
4. Conclusions
- a. **Conservative approach to passenger forecast**
    - i. Market based assessment
    - ii. Airline industry volatility & consolidation (*number of potential hub locations reducing*)
  - b. Plausible facility requirements and associated development alternatives
  - c. Capital Improvement Program (CIP) and Financial Impacts

## 2012 Master Plan Forecast – Passenger Enplanements



# Lexington Blue Grass Airport

## Draft Master Plan Forecast (2012)

*Comparison to FAA 2011 Terminal Area Forecast (TAF)*

*June 19, 2012*

Passenger Enplanement Forecast	2012	2016	2021	2031
Low Scenario	524,932	541,474	542,288	565,705
Medium Scenario	524,932	541,474	569,095	628,634
High Scenario	524,932	600,130	627,751	730,305
<b>2011 FAA TAF</b>	<b>550,661</b>	<b>613,156</b>	<b>703,398</b>	<b>933,551</b>
Low Scenario % Difference to FAA TAF	-4.7%	-11.7%	-22.9%	-39.4%
Medium Scenario % Difference to FAA TAF	-4.7%	-11.7%	-19.1%	-32.7%
High Scenario % Difference to FAA TAF	-4.7%	-2.1%	-10.8%	-21.8%

Based Aircraft Forecast	2012	2016	2021	2031
2012 Master Plan (Medium Scenario)	117	123	133	157
<b>2011 FAA TAF</b>	<b>146</b>	<b>154</b>	<b>164</b>	<b>186</b>
% Difference to FAA TAF	-19.9%	-20.1%	-18.9%	-15.6%

Total Aircraft Operations*	2012	2016	2021	2031
Low Scenario	64,451	54,000	53,343	55,873
Medium Scenario	64,451	61,689	64,744	74,338
High Scenario	64,451	81,032	83,396	91,627
<b>2011 FAA TAF</b>	<b>66,434</b>	<b>68,312</b>	<b>70,788</b>	<b>76,193</b>
Low Scenario % Difference to FAA TAF	-3.0%	-21.0%	-24.6%	-26.7%
Medium Scenario % Difference to FAA TAF	-3.0%	-9.7%	-8.5%	-2.4%
High Scenario % Difference to FAA TAF	-3.0%	18.6%	17.8%	20.3%

*Note: Total Aircraft Operations include Air Carrier Projections, General Aviation Projections, and the Average Military Operations from Tower Counts (1,850 operations) carried forward throughout the Forecast Period*



## **Draft** Aviation Demand Projections *(Commercial Air Service & General Aviation)*

# General Forecast Considerations

- **Commercial Air Service**
  - Lexington Market Specific (Catchment Area)
  - Current Airline Industry Conditions
  - Airline Hub Strategies
  - Limited Number of “New” Air Service Providers
  - Conservative Growth
- **General Aviation**
  - Current Economic Condition
  - Lexington Demographics
  - Tenant Interviews
  - Regional & National Trends
    - Aircraft Shipments, Flight Hours, Fleet Mix, Etc.



# Commercial Air Service



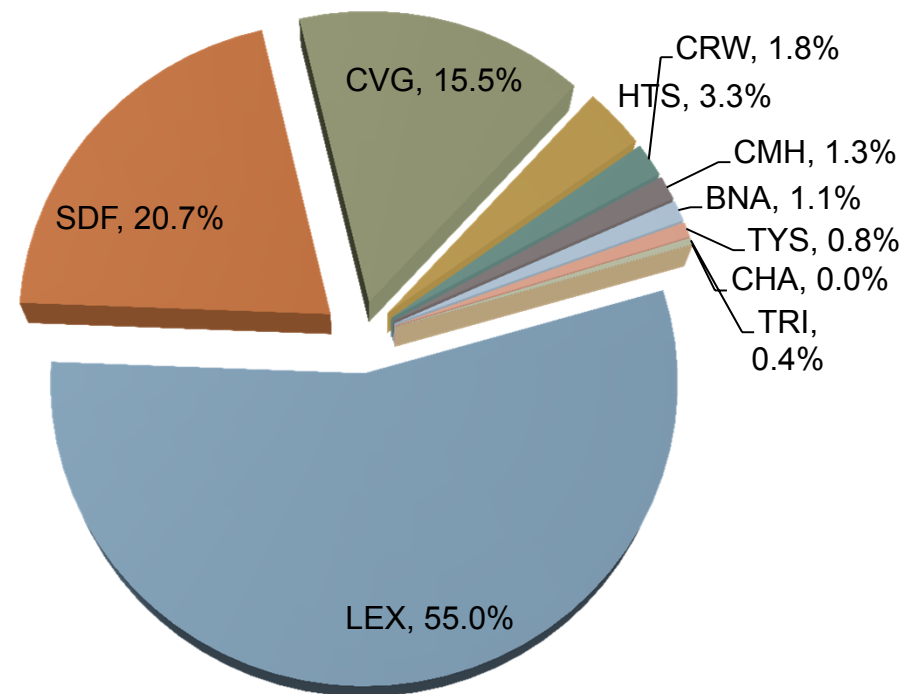
# Forecast Approach

- **Market Specific**
  - Lexington Catchment Area
  - Influence of Competing Airports
  - Airline Hub Strategies
    - Route Performance
    - Airline Fleet Mix
      - Reduction in Regional Jet (RJ) Aircraft
  - Recent Changes in Air Service Offerings
    - AirTran/Southwest Service
    - Allegiant 757 Service to Las Vegas
  - Impact of Fuel Prices
- **Three “Tier” Process**
  - 2011 Passenger Leakage Study
  - Air Service Data and Trends
  - Air Service Demand Scenarios



# 2011 Passenger Leakage Study

- **Lexington Catchment Area Generated an Estimated 940,000 bookings** *(approximately)*
- **Lexington Airport Retains Approximately 55% of all Bookings in Catchment Area**
- **Louisville now Captures 20.7% of the Lexington Catchment Area**
  - Primarily driven by changes in air service offerings at Cincinnati



LEX – Lexington Blue Grass Airport  
 SDF – Louisville International Airport  
 HTS – Tri-State Airport  
 CRW – Yeager Airport  
 CMH – Port Columbus International Airport  
 BNA – Nashville International Airport  
 TYS – Mc Ghee Tyson Airport (Knoxville)  
 CHA – Lovell Field Airport (Chattanooga)  
 TRI – Tri-Cities Regional Airport (Bristol/Johnson/Kingsport)

Data Source: ARC Corporation Ticket Information, Bureau of Transportation Statistics (BTS) & Ailevon

# 2011 Passenger Leakage Study

- **Despite Second Highest Average Airfare, Lexington still Captures 55% of the Catchment Bookings**
- **Lexington catchment area passengers clearly prefer to use Lexington when nonstop service is available**
  - Lexington retains 61% of its catchment area in markets where it has nonstop service, but only 53% in markets without nonstop service.
- **However, frequency or schedule do not seem to correlate with retention.**
  - For example Ft. Lauderdale was served with less than daily service during the time period, yet managed to capture 77% of the catchment area bookings
- **Delta is the most preferred carrier in the catchment area, most likely driven by the amount of nonstop service offered at Lexington, Louisville, and Cincinnati.**

Airport	Weekly Departures	Weekly Seats	Seats Per Departure	# of Nonstop Destinations	Avg. One-Way Fare (YE3Q11)	% of LEX Catchment
<b>Lexington</b>	<b>1,018</b>	<b>59,683</b>	<b>58.6</b>	<b>15</b>	<b>\$230</b>	<b>55.0%</b>
Louisville	2,299	185,994	80.9	27	\$202	20.7%
Cincinnati	4,935	352,381	71.4	49	\$255	15.5%
Huntington	218	13,847	63.5	6	\$129*	3.3%
Nashville	5,726	573,163	100.1	54	\$188	1.5%
Columbus	4,182	348,476	83.3	40	\$191	1.3%
Charleston	728	37,129	51.0	12	\$214	1.3%
Knoxville	1,560	91,819	58.9	22	\$224	0.8%
Tri Cities	454	24,461	53.9	4	\$220	0.4%
Chattanooga	719	38,132	53.0	8	\$204	0.0%

Data Source: Bureau of Transportation Statistics (BTS) & Ailevon

\* Huntington's average fare is impacted by 60% of the airport's passengers using Allegiant's ultra low-fare service. In non-Allegiant markets, the average fare is actually \$219, similar to Lexington.

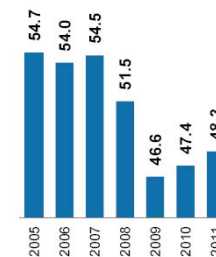
# Changes to Lexington Air Service

- **Mainly Macro:**
  - Fuel
  - Hub Strategies
  - Route Performance
  - Aircraft Utilization
- **Industry – Gains in Efficiency**
  - Impact of higher fuel prices
- **Result at Lexington**
  - Overall Capacity – Down 5.3%  
(Sept. 2012 versus Sept. 2006)
  - Airlines quest for fuel efficiency:
    - Reduced Regional Jet (RJ) & Turboprop service
    - Historically important to Lexington air service

## Airline Energy Costs on the Rise... Again

Using Less but Paying More Translates to Rising Expenses – More than \$50B in 2011

**Using Less Fuel**  
Million Gallons per Day



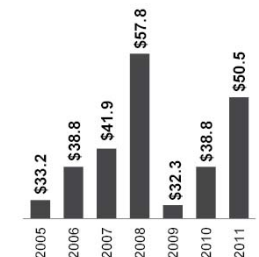
Source: BTS for U.S. airlines

**Paying More per Gallon**  
Jet Fuel Price (U.S. Gulf Coast)



Source: Energy Information Administration

**Spending More Annually**  
Billions of Dollars Spent on Fuel



Source: BTS for U.S. airlines



8

airlines.org

# Top Markets (Domestic & International)

- Lexington Provides Non-Stop Service to Over Half of the Top 25 Domestic Destinations
- Given the Geographical Variety of the Top 25 International Destination, Lexington Requires a Breadth of Service Offerings to Airline Hubs

## Domestic Top 25

Rank	Destination	Passengers Per Day Each Way	Average Fare	Nonstop Service
1	Orlando	127	\$ 88	Yes
2	Ft. Lauderdale	67	\$ 122	Yes
3	New York (LGA)	48	\$ 192	Yes
4	St. Petersburg	46	\$ 67	Yes
5	Atlanta	40	\$ 215	Yes
6	Dallas/Ft. Worth	36	\$ 226	Yes
7	Fort Myers (Punta Gorda)	35	\$ 79	Yes
8	Chicago O'Hare	34	\$ 219	Yes
9	Washington Reagan	33	\$ 222	Yes
10	Los Angeles	31	\$ 223	No
11	Orlando Sanford	31	\$ 66	Yes
12	Las Vegas	26	\$ 203	No
13	Detroit	23	\$ 224	Yes
14	Charlotte	23	\$ 183	Yes
15	Minneapolis/St. Paul	21	\$ 205	Yes
16	San Francisco	21	\$ 238	No
17	Houston Bush	21	\$ 261	Yes
18	Boston	20	\$ 206	No
19	Denver	19	\$ 199	No
20	Philadelphia	18	\$ 202	No
21	Baltimore	17	\$ 171	No
22	Phoenix	16	\$ 204	No
23	Tampa	16	\$ 190	No
24	San Antonio	16	\$ 176	No
25	Seattle	16	\$ 244	No

## International Top 25

Rank	Country	Passengers Per Day Each Way	Average Fare
1	Japan	13	\$ 1,236
2	United Kingdom	11	\$ 496
3	Mexico	19	\$ 276
4	Canada	15	\$ 333
5	Germany	7	\$ 617
6	China	5	\$ 763
7	India	4	\$ 727
8	Italy	4	\$ 650
9	South Korea	3	\$ 867
10	Hong Kong	3	\$ 733
11	Ireland	5	\$ 453
12	Taiwan	1	\$ 1,645
13	Brazil	2	\$ 819
14	France	3	\$ 580
15	United Arab Emirates	1	\$ 1,166
16	Spain	3	\$ 556
17	Australia	1	\$ 1,045
18	Philippines	2	\$ 849
19	Netherlands	2	\$ 662
20	South Africa	1	\$ 1,182
21	Bahamas	4	\$ 255
22	Jamaica	4	\$ 258
23	Argentina	1	\$ 809
24	Switzerland	1	\$ 632
25	Denmark	1	\$ 562

Data Source: Bureau of Transportation Statistics (BTS) & Ailevon



# Demand Projections

- **Scenario Based Approach**

- General Assumptions

- Increase in Aircraft Size (Reduction in Frequency)
- Applied Compounded Annual Growth Rate of 1% to Enplanements
- Assumed Flat Seat Capacity until Upgrade in Aircraft Equipment/Size

- High Scenario *(Built from Medium Scenario)*

- Allegiant increases to 5 time weekly service to all nonstop Florida cities (2014)
- Allegiant opens a new operations base in the Eastern Region and increases Lexington service (2023)
- Spirit or Frontier (Ultra-Low Cost Carrier) add Lexington Service (2028)

- Medium Scenario

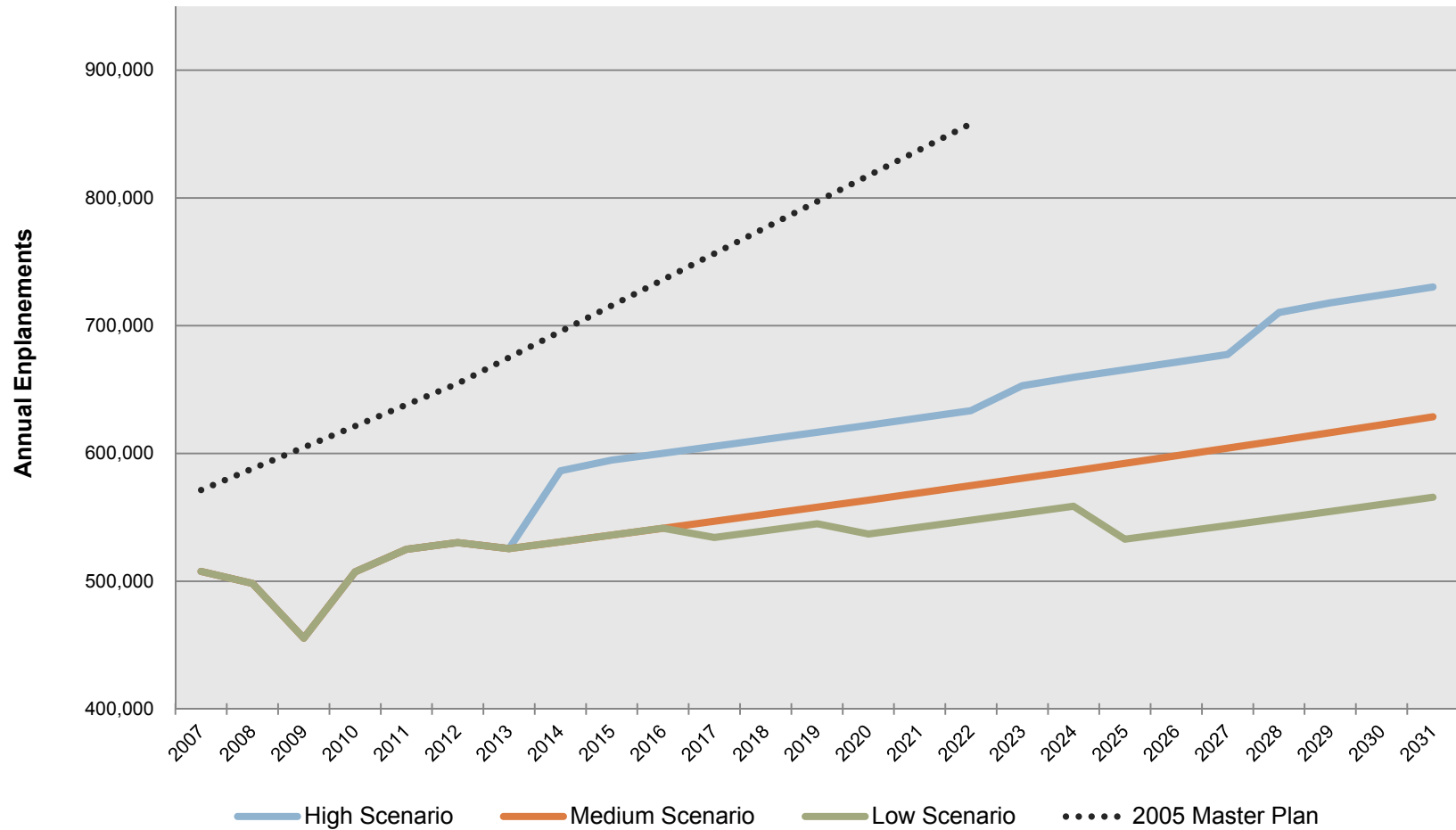
- Assumes flat seat capacity
- Assumes reduction in frequency as aircraft size is upgraded
- Traffic grows at 1% annually
- No significant change in network carrier destinations
- Allegiant backfills AirTran withdrawal – Orlando market (2013)

- Low Scenario *(Built from Medium Scenario)*

- Delta eliminates service to Minneapolis/St. Paul – Regional Jet economic (2017)
- Low-Cost Carriers increase service offerings at Nashville & Columbus (2020)
- Ultra-Low-Cost Carrier initiates service at Cincinnati (2025)

# Demand Projections

## Annual Enplanement Forecast



*Note: Annual Projections based on Year Ending 3<sup>rd</sup> Quarter*



# Demand Projections

Forecast Metric	Existing 2011	2016			2021			2031		
		High	Medium	Low	High	Medium	Low	High	Medium	Low
Annual Enplanements	524,932	600,130	541,474	541,474	627,751	569,095	542,288	730,305	628,634	565,705
Peak hour Enplanements	220	260	235	235	272	247	235	317	272	245
Annual Departures	13,959	11,541	11,125	11,125	10,401	9,985	9,551	9,098	8,370	7,936
Peak Month Departures	1,340	1,108	1,068	1,068	998	959	917	873	803	762
Peak Day Departures	43	36	34	34	32	31	30	28	26	25
Peak Hour Departures	6	5	5	5	5	4	4	4	4	3

*Note: Annual Projections based on Year Ending 3rd Quarter*

Air Service Actions			
Year	High Scenario	Medium Scenario	Low Scenario
2013	No Event	Allegiant backfills AirTran withdrawal (Orlando Markets)	No Event
2014	Allegiant increase nonstop Florida service to 5 flights weekly	No Event	No Event
2017	No Event	No Event	Delta eliminates service to Minneapolis/St. Paul
2020	No Event	No Event	Low-Cost carriers increase service offerings at Nashville & Columbus
2023	Allegiant opens a new operations base (Eastern Region), increases Lexington Service	No Event	No Event
2025	No Event	No Event	Ultra-Low-Cost carrier initiates service at Cincinnati
2028	Spirit or Frontier (Ultra-Low Cost) carrier adds Lexington service	No Event	No Event

# Developed “Plug ‘n Play” Contingencies

- Lower likelihood of occurring
- Driven primarily by industry trends outside of the Lexington Market

High Scenario		Medium Scenario		Low Scenario	
2014	No Event	2014	No Event	2014	American downsize Chicago & exits Lexington
2018	American & US Airways merger and adds Philadelphia service	2018	United adds Washington Dulles service	2018	No Event
2020	Delta completely de-hubs Cincinnati, no new competitor	2020	American adds Miami service	2020	Delta & US Airways merger - US exits Charlotte
2023	Scheduled Charter to Caribbean markets	2023	Scheduled Charter Cancun service	2023	Delta exits LEX-DCA market.
2028	Allegiant enhanced fuel efficiency & initiates long-haul flying from Lexington	2028	No Event	2028	No Event

# General Aviation



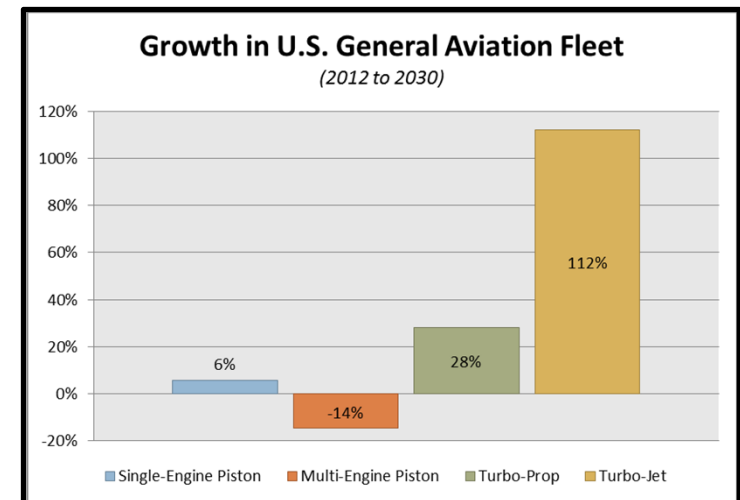
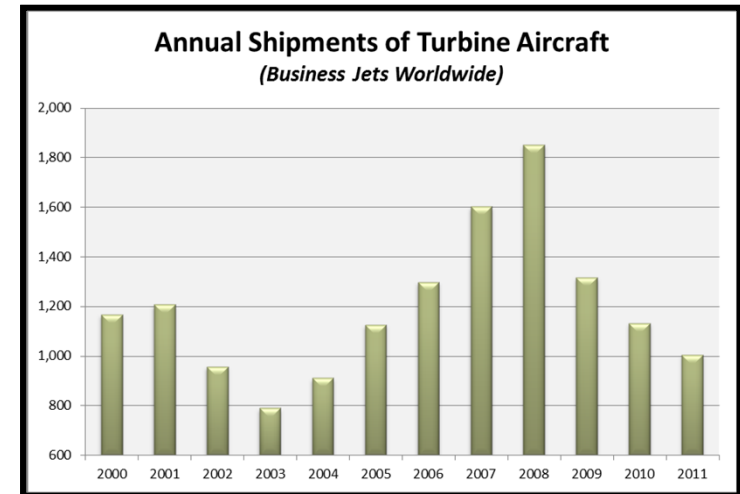
# Forecast Drivers

- **National/International**
  - Stagnant U.S. Economy (Recovery?)
  - Socioeconomic (Employment, Disposable Income, Energy Cost)
  - Corporate Business Strategies (International Growth)
- **Regional**
  - Competing Airports
  - Socioeconomic
- **Local**
  - Economy
  - Supply and Demand



# National & Regional Trends

- **Economy & Socioeconomic** *(State)*
  - Condition of economy *(Recession or Recovery?)*
  - Projected socioeconomic demographics over next 20-years is strong
- **Service Area** *(Airports within 30 Nautical Miles)*
  - Lexington is the Predominant Corporate Aviation Center *(90% of Based Aircraft)*
  - Competition for General Aviation Traffic Service Area Airports
    - Jet-Capable Facilities with Some Support Services
    - No Enhanced Support Services (ARFF, ILS, ATCT, Etc.)
- **Fleet Mix Trends**
  - Piston
    - Single-Engine *(Limited Growth)*
    - Multi-Engine *(Decline)*
    - 27% decline in hours flown *(2001-2010)*
  - Turbine
    - 29% Growth in Hours Flown *(2001-2010)*
    - Significant growth in shipment of business jets *(2003-2008)*
    - Significant growth in Fractional Ownership programs
    - Half of all orders projected – North American clients
  - Flight Training
    - Growth opportunity *(Pilot Shortage & Demand)*



# Local Considerations

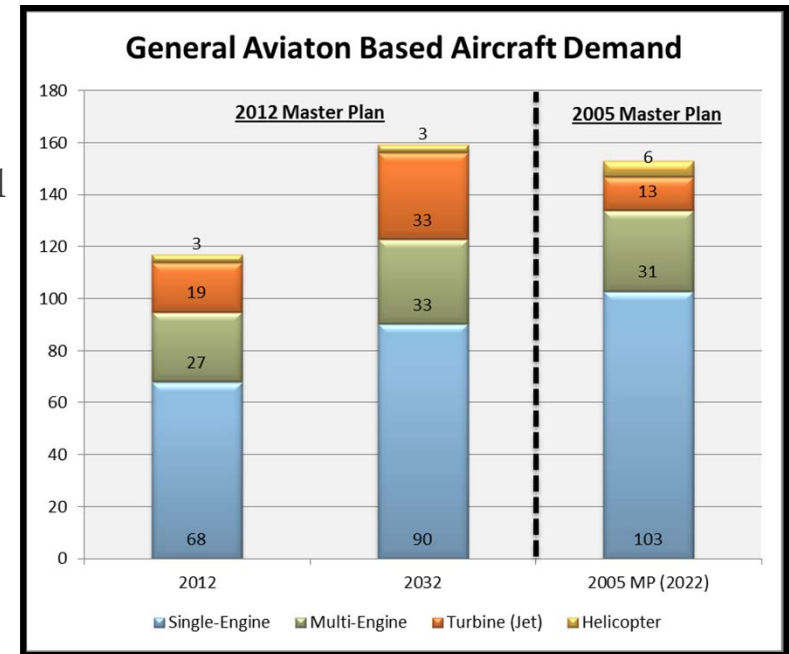
- **General Aviation Itinerant**
  - Impact of Recession
    - In line with national and state trends
  - Socioeconomic
    - Earnings (corporate)
    - Personal Income (general aviation)
- **Traffic Mix**
  - Fractional Ownership Programs
  - Itinerant Traffic is Domestic & Smaller Turbine Aircraft
- **Master Plan Tenant Interviews**
  - Positive Outlook on Demand for Services
  - Expansion Plans Identified (Short & Long Term)
  - Demand Influences
    - Economy
    - Corporate & Business Environment
    - Competing Airports & Rate Structures
    - Utilization of Georgetown & Frankfort for Training Activities
    - Hangar Lease Terms & Reversion Clause
  - Desire to Utilize Runway 9-27 Development





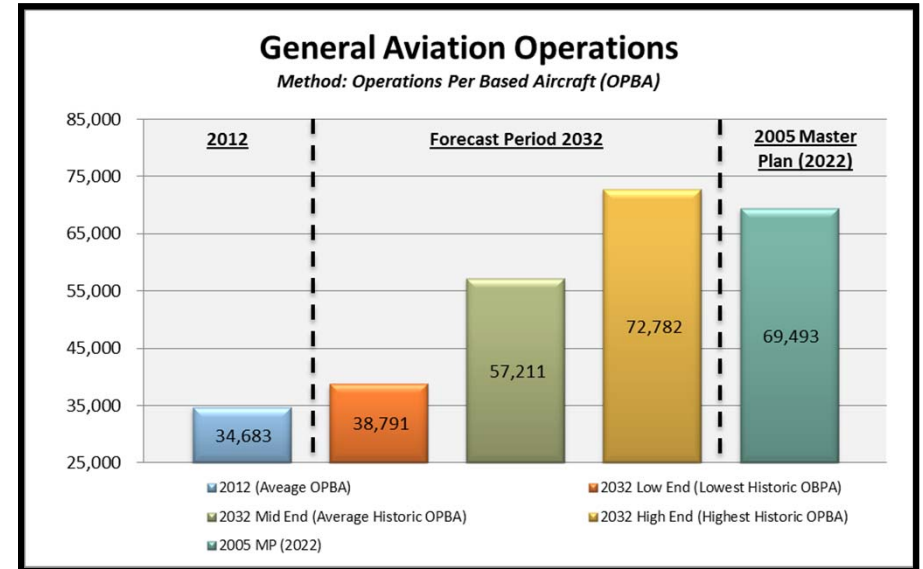
# Demand Projections (Based Aircraft)

- **Master Plan Assumes the Following:**
  - Based Aircraft in 2012 & 2013 Remain Constant Given Current Economic Conditions
  - Current Hangar Waiting List will be Absorbed throughout the 20-Year Planning Period
  - New Hangar Units may be Constructed in 2013
- **Master Plan Demand Projections**
  - Single-Engine Aircraft
    - Projection: 1.5% Annual Growth
      - Demand for Flight Training & Lexington Flying Club
      - Considerations of Competing Airports
  - Demand for Multi-Engine Aircraft *(Non-Jet Aircraft)*
    - Projection: 1.0% Annual Growth
      - Growth Opportunities in Multi-Engine Turbine Aircraft (i.e. King Air)
      - Projected Growth in Corporate Utilization & Business Environment
  - Demand for Corporate Jet Aircraft (Turbine)
    - Projection: 3.0% Annual Growth
      - Significant Historic Growth (7 Based Aircraft in 2001 to 19 Aircraft in 2011)
      - Limited Facility Expansion Opportunities for Large Aircraft Storage
      - Current Hangar Capacity for Corporate Jets
      - Market Share of Jet Based Aircraft within Region (>90%)



# Demand Projections (Aircraft Operations)

- **Decline Considerations** *(Historic)*
  - Corporate Utilization
  - Public Perceptions
  - Personal Use
  - Flight Training
  - Impact of Georgetown & Frankfort
- **Growth Considerations**
  - Economic Recovery
  - Increased Flight Training
  - Increased Aircraft Maintenance & Repair Services
  - Utilization of Runway 9-27 Development
- **Conservative Growth Projected**
  - Economic Condition (Current)
  - Controlled Airspace
  - No Airfield Capacity Issues Identified



“Growth Back to  
Pre-9/11 Levels”



# Moving Forward (General Aviation)

- **Master Plan Tenant Interviews**
  - Generally Satisfied with Current Operating Environment
  - Desire to Utilize Runway 9-27 Development
  - Level of Congestion & Potential Safety Considerations in One Area
    - TAC Air, Mustang Aviation, Aero-Tech, General Aviation Hangars
- **Facility Requirements**
  - Aircraft Hangars (T-Hangars, Corporate, Community, Etc.)
  - Apron Utilization
  - Runway 9-27 Development Area
  - Facility Condition Assessment
  - Prioritization of Development Objectives
  - Hangar Lease Terms & Reversion Clause
- **Overall Master Plan Focus will be Land Use Utilization & Prioritization of Facility Developments**

