
CHAPTER THREE

Aviation Demand Forecasts

Projecting aviation demand is a critical element in the overall master planning process. Its use defines an airport's ability to accommodate existing and future aircraft and operations, thus determining the type, size, and timing of future airside and landside development. In this study, projections of aviation demand for the years 2007-2026 were prepared for passenger enplanements, air cargo volumes, aircraft operations, and based aircraft at RIC. This chapter provides a short summary of the projected aviation demands for these elements. For a more detailed forecast, please see **Appendix D**.

Elements of the forecast include the following:

- Commercial Passenger Traffic Forecast
- Cargo Volume Forecast
- Commercial Passenger Aircraft Operations Forecast
- Freighter Operations Forecast
- Military Operations Forecast
- General Aviation Operations Forecast
- Forecast of Based Aircraft at Richmond

This forecast also estimates peak hour passenger traffic and operations at RIC.

3.1 MARKET AREA CHARACTERISTICS

The Richmond Metropolitan Statistical Area (MSA) includes the city of Richmond, Virginia's capital, and its surrounding and economically interdependent region. The Richmond Metropolitan Statistical Area (MSA) is comprised of 16 counties and four cities¹, including the City of Richmond — Virginia's capital — and is geographically spread over a 5,717 square mile area. The Richmond MSA is located approximately 100 miles south of Washington, DC and 90 miles northwest of Norfolk.

¹ Richmond MSA is defined as the counties of Amelia, Caroline, Charles City, Chesterfield, Cumberland, Dinwiddie, Goochland, Hanover, Henrico, King and Queen, King William, Louisa, New Kent, Powhatan, Prince George, and Sussex; and the cities of Colonial Heights, Hopewell, Petersburg, and Richmond.

Exhibit 3.1 Richmond Metropolitan Statistical Area



Source: Virginia Economic Development Partnership

The most recent population data indicate that the Richmond MSA contains approximately 1.2 million residents, and projections suggest that the MSA will continue to experience steady and stable population growth above the national average and slightly above that of the state.

The Richmond MSA has a strong and vibrant economy, which is projected to remain strong for the foreseeable future. The MSA is home to 13 *Fortune 1000* companies, seven of which rank in the *Fortune 500*.

Total income for the Richmond MSA has grown at an average annual rate of 3.2 percent between 1986 and 2006, and is projected to continue to increase at the same rate through 2026. Both historic and forecast income growth rates for the Richmond MSA exceed those for the U.S. as a whole.

With a per capita income of \$34,531, the Richmond MSA compares favorably to that of the U.S. as a whole, which had a per capita income of \$32,955 in 2006. The Richmond MSA had 632,000 participants in the civilian labor force in 2006, and projections suggest that employment will continue to grow above the national average and in-line with that of the state.

3.2 CURRENT PASSENGER AIR SERVICE

As of September 2007, RIC had an average of 662 scheduled weekly commercial passenger aircraft departures, and 50,000 scheduled weekly seat departures.² The airport is served by six “legacy” carriers — US Airways, Delta, United, American, Continental, and Northwest — and three low cost carriers (LCCs) — AirTran, JetBlue, and Skybus. Carrier shares of scheduled aircraft departures and seats are shown in the table below.

Table 3.1 Airline Share Of Scheduled Passenger Aircraft Departures And Seat Departures At Richmond International Airport, September 2007

Airline	Share of Aircraft	
	Departures	Share of Seats
US Airways	29%	25%
Delta	21%	23%
United	11%	10%
American	10%	10%
AirTran	6%	9%
JetBlue	6%	8%
Continental	10%	7%
Northwest	5%	4%
Skybus	1%	4%
Total	100%	100%

Source: Official Airline Guide schedule tapes

The average number of aircraft seats per departure at RIC in August 2007 was 73, with the majority (56 percent) of the flights served by Regional Jet (RJ) aircraft with 50 seats or less. In total, 78 percent of flights out of RIC are served by RJ or turbo-prop aircraft, and the remaining 22 percent of flights operated with larger narrowbody equipment.

Currently, nonstop passenger service is offered from Richmond to 21 destinations, all within the United States. Most of these services are by carriers to their hubs, including Atlanta (Delta and AirTran), Charlotte (US Airways), Chicago (United and American), New York-Kennedy (Delta and JetBlue), Philadelphia (US Airways), Dallas/Ft. Worth (American), Cincinnati (Delta), New York-Newark (Continental), Washington-Dulles (United), Detroit (Northwest), Cleveland (Continental), Houston-Intercontinental (Continental), Minneapolis-St. Paul (Northwest), Miami (American), and Memphis (Northwest). These 15 hub destinations collectively account for 76 percent of scheduled passenger aircraft departures and 81 percent of scheduled seats at RIC.

² Source: Official Airline Guide schedule tapes.

Table 3.2 Scheduled Destinations Served Nonstop From Richmond International Airport, September 2007

Destination	Weekly Departures	Weekly Outbound Seats	Share of Departures	Share of Seats
Atlanta	87	11,143	13.1%	22.6%
Charlotte	56	5,036	8.5%	10.2%
Chicago-O'Hare	75	4,736	11.3%	9.6%
New York-Kennedy	54	4,050	8.2%	8.2%
Philadelphia	47	3,131	7.1%	6.3%
New York-LaGuardia	61	3,050	9.2%	6.2%
Dallas/Ft. Worth	20	2,720	3.0%	5.5%
Boston	32	2,300	4.8%	4.7%
Cincinnati	31	1,690	4.7%	3.4%
New York-Newark	32	1,600	4.8%	3.2%
Washington-Dulles	28	1,496	4.2%	3.0%
Orlando	19	1,352	2.9%	2.7%
Detroit	20	1,350	3.0%	2.7%
Pittsburgh	26	1,300	3.9%	2.6%
Columbus	7	1,092	1.1%	2.2%
Cleveland	18	900	2.7%	1.8%
Houston-Intercontinental	18	900	2.7%	1.8%
St. Louis	11	550	1.7%	1.1%
Minneapolis-St. Paul	7	350	1.1%	0.7%
Miami	7	308	1.1%	0.6%
Memphis	6	300	0.9%	0.6%
Total	662	49,354	100.0%	100.0%

A 22nd nonstop destination will be added in November 2007, when JetBlue launches daily nonstop service between Richmond and Fort Lauderdale.

3.3 FORECAST APPROACH AND METHODOLOGY

This forecast employed a combination of statistical techniques and published industry forecasts of traffic and regional economic conditions in its forecasts of traffic and activity at RIC. These were supported by interviews with local airport stakeholders to ensure that the forecast fully considered local developments and air carrier views that could have a bearing on future activity at the airport.

Local stakeholders that were interviewed included:

- US Airways
- Delta
- United
- AirTran
- JetBlue

- FedEx
- DHL
- Army National Guard
- Jetstream Ground Services
- MartinAir
- Prime Flight Services
- Greater Richmond Partnership/Greater Richmond Chamber of Commerce

3.4 COMMERCIAL PASSENGER FORECAST

The forecast of commercial passengers at RIC is based on the use of a series of linear regression equations, correlating Richmond's historic passenger traffic with explanatory drivers, and using this statistical relationship to forecast growth in passenger traffic in the future.

The three explanatory drivers employed are:

- Time
- Total income in Richmond Metropolitan Statistical Area (MSA)
- Passenger yield (revenue per passenger-mile flown)

These drivers were selected as the most important variables that affect the amount of passenger traffic that a commercial airport is likely to accommodate. There are certainly other factors that can affect traffic levels, ranging from carrier capacity decisions to political events such as the September 11 terrorist attacks. Nonetheless, these three variables provide the most important intuitive explanations or root causes of traffic changes.

Time. Passenger traffic at Richmond has demonstrated a relatively steady growth trend over the past several years. The only serious interruptions to this growth trend occurred after the September 11 terrorist attacks in 2001, which was common for most airports in the United States, and in 2004 when passenger traffic at RIC spiked in response to the entry of two LCCs, AirTran and JetBlue. Given this historic trend, it is a fair assumption that in the future traffic may increase along more or less the same growth trend that Richmond has sustained over the past two decades.

Based on the assumption that this linear trend will continue into the future, a regression equation correlating traffic with time is used to project RIC traffic to the year 2026. An adjustment is made to account for the recent increases in traffic in the years 2005 and 2006, which are above the levels predicted by the linear equation.

Total income in Richmond Metropolitan Statistical Area (MSA). The second regression approach assumes that total income in Richmond and the surrounding region is the primary driver of passenger traffic at the airport. This makes intuitive sense; as the local economy increases, so then will the demand for air services, for local residents as well as visitors, increase, too. Total income in the MSA is a function of population as well as per capita income and thus is a better predictor of traffic levels than population or per capita income alone.

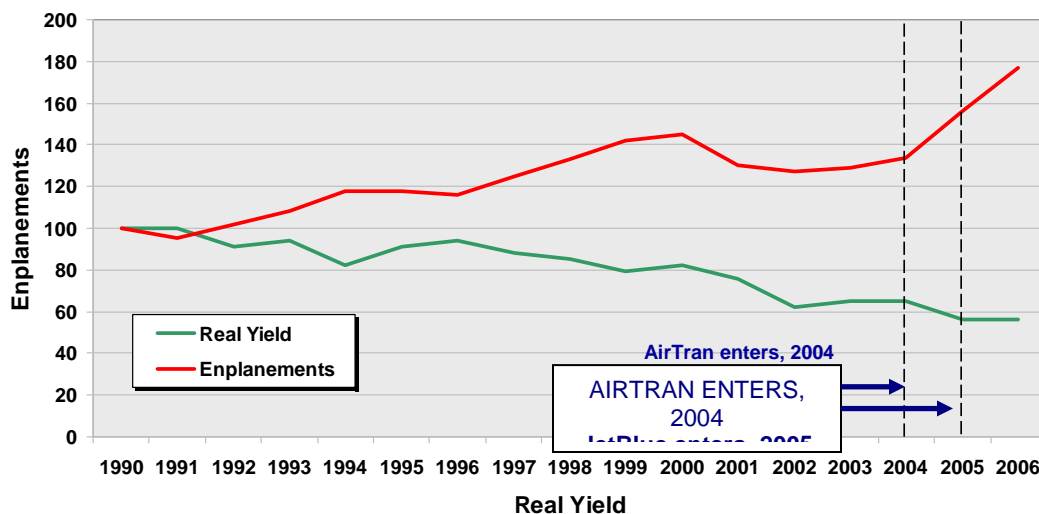
In point of fact, there is a very tight statistical relationship between real income and passenger enplanements at RIC.

With a linear regression equation establishing the statistical relationship between real income in the MSA and enplanements at RIC, projected levels of real income can be used to predict future levels of passenger traffic. As with the time series approach described earlier, a similar adjustment has been made to take into consideration the recent traffic increases above predicted levels in 2005 and 2006.

Passenger yield. As shown in the two scatterplots below, the linear trends predicting historic traffic levels as a function of time and income alone fail to predict the increased levels of traffic in the years 2005 and 2006.

Passenger yield, or average passenger fare per revenue passenger mile (RPM), provides an additional explanation for traffic. This is particularly important in the case of RIC, which has attracted two LCCs in the past several years. There has been a strong upsurge in traffic as a result of their entry into RIC's market.

Exhibit 3.2 Indexed Changes in Real Yield and Passenger Enplanements at RIC, 1990-2006. Index: 1990 = 100



Although yield is important and explains the traffic stimulation that occurred in response to AirTran and JetBlue entering the Richmond market, yield alone fails to be a sufficient predictor of passenger traffic levels. A more reasonable explanation for traffic increases would be based on both changes in yield as well as MSA income.

Therefore, a *multiple* regression equation with both real income and real yield as independent variables was developed to predict traffic levels. This equation was employed as the third regression model used for this forecast. Inputs into the model included projected levels of real income for the Richmond MSA and projected real yield for Richmond origin-destination passengers.

Use of linear equations to project future traffic levels. In each instance, this forecast employs linear regression equations rather than exponential. Linear models, by their nature, are characterized by a declining rate of growth as time or income increases, or as yield decreases, whereas exponential models are characterized by a constant percentage growth rate.

The forecasters have selected linear models as they believe that they are more representative of reality. As an airport's traffic grows and it approaches a more mature level of activity, growth rates will tend to decline over time.

Low, High, and Base Forecasts. The three regression models produce a range of passenger traffic forecasts, with the time series forecast being the lowest, the income-based forecast somewhat higher, and the income and yield-based forecast the highest of all. Based on this, range, low, high, and base forecasts have been identified, with the base forecast being an average of the three regression-based forecasts previously discussed.

3.5 CARGO VOLUME FORECAST

Despite a rapidly growing regional economy, cargo volume at Richmond has shown little growth since the September 11 terrorist attacks.

Some of this stagnation may have been caused by increasing modal shift — where integrated cargo carriers have substituted ground trucking for some air shipments, for short-medium distances within which trucking is sufficiently quick to meet customers' delivery commitments. This phenomenon is not unique to the Richmond market and is very much a national trend.

However, interviews with air cargo stakeholders at RIC have suggested that there is considerable demand for air cargo services as freighters are often full inbound to Richmond. There is also considerable expectation of growth in the future.

This forecast is based on the premise that cargo volumes will indeed grow in the future at RIC, counter to the historic trend. The growth of the local economy, and in particular the booming business climate, should drive growth in both inbound and outbound volumes.

This forecast assumes that cargo volumes will increase in line with projected volume increases for the United States domestic air cargo market as a whole.

Both the FAA and Airbus project 3.3 percent average annual growth of air cargo volumes over the longer term for the U.S. domestic market, while Boeing projects a base cargo volume growth of 3.8 percent per year.³ The forecasters have assumed an average of the three growth rates for Richmond's air cargo forecast of 3.5 percent per year for the 2006-2026 forecast period.

3.6 COMMERCIAL PASSENGER AIRCRAFT OPERATIONS FORECAST

The commercial passenger aircraft operations forecast is a derived demand that is tightly linked to projections of future passenger traffic levels.

Operations projections are based on estimates of the average number of passengers per aircraft departure or arrival, applied to forecasts of total passenger traffic. The number of passengers per departure is, in turn, a function of aircraft seating capacity and load factor.

In this forecast, the average number of passengers per flight at Richmond is projected to continue increasing at a faster rate than for the U.S. as a whole, for the following reasons:

- U.S. LCCs generally operate large regional jets such as the ERJ-190, or narrowbodies such as the 717, 737 or A319. LCC aircraft tend to have relatively dense seating configurations and typically operate at higher load factors than legacy airlines. As service increases at Richmond, the average number of seats per departure, as well as load factors, should increase as well.
- Richmond already has relatively high frequency service to major U.S. hubs. It is reasonable to assume that carriers will increase aircraft capacity as traffic increases, rather than simply adding frequencies. Interviews with a number of air carriers and their representatives at RIC have indicated that there are indeed plans to utilize larger equipment to handle growing traffic.
- With the average aircraft size at RIC being relatively small at present, there is considerable opportunity for capacity increases. It will not be difficult for airlines to find larger aircraft to replace smaller ones as traffic demand grows. Larger RJ's, such as the ERJ-170/175/190 and CRJ-700/900, already account for nearly 20 percent of all regional jet activity at RIC. In the future, there are expected to be more instances of 70-90 seat RJs replacing 40-50 seaters, and 737 and A319/A320 narrowbodies replacing larger RJ's as well. Ultimately, there is likely to be more activity by larger narrowbodies such as the Boeing 757 or Airbus A321.

This forecast projects that the number of average passengers per departure or arrival will increase at twice the rate projected by the Federal Aviation Administration for the U.S. as a whole. At Richmond, average passengers per departure/arrival will increase twice as

³ The Federal Aviation Administration, Airbus, and Boeing cargo forecasts are the three most commonly referenced projections of long term air cargo volume growth in the U.S. domestic market, and are all widely used within the industry for planning purposes.

rapidly, from 46.1 in 2006 to 50.2 by 2026 — a 9.1 percent total increase over the 20-year forecast horizon.

3.7 AIR TAXI AND OTHER COMMERCIAL PASSENGER OPERATIONS FORECAST

The remaining commercial operations at Richmond consist of air taxi services and corporate aircraft services provided by fractional ownership companies. It is estimated that there were approximately 12,100 such operations in 2006, or an average of about 33 takeoffs and landings per day.

As the local economy grows, the forecasters believe that such services will also increase in line with the demand for scheduled air services.

This forecast assumes that air taxi and other commercial passenger operations will grow at the same rate as the base forecast of scheduled passenger aircraft operations, or about 2.6 percent per year.

3.8 MILITARY OPERATIONS FORECAST

Military operations at Richmond have been trending downward since the 1990's. Between 1990 and 2006, operations dropped 62 percent (5.8 percent per year). In 2006, there were fewer than 10 thousand military operations at RIC — less than 30 landings and takeoffs per day on average.

The 192d Wing of the Virginia Air National Guard, will be permanently leaving Richmond and has no plans to continue training activity at RIC. The departure of the Air National Guard is expected to result in a 40 percent reduction in military operations in 2008.

The Army National Guard will remain at RIC and continue to operate their fixed wing and rotorcraft sorties. Over the next four to five years, the Army National Guard plans to introduce three manned fixed wing aircraft; this forecast assumes that the new fixed wing aircraft will equate to a 10 percent increase in operations between 2008 and 2013, to 6,400 annual takeoffs and landings. Manned military operations are assumed to remain fixed at this level for the remainder of the forecast period to 2026.

3.9 GENERAL AVIATION OPERATIONS FORECAST

GA operations have also been trending downwards since the 1990's, with a 68 percent drop (6.8 percent per year) in landings and takeoffs between 1990 and 2006.

This forecast assumes that GA operations at Richmond will level off and begin to increase at a moderate rate, driven by the growing economy in the region and an increasingly favorable business climate with more Fortune 500 companies locating offices or facilities in the region. This forecast projects GA operations growth averaging 2.5 percent per year through the year 2026.

3.10 BASED AIRCRAFT FORECAST

As GA activity at Richmond has declined, the number of aircraft based at RIC has also decreased. The current number of based aircraft is less than half of the level of 1993.

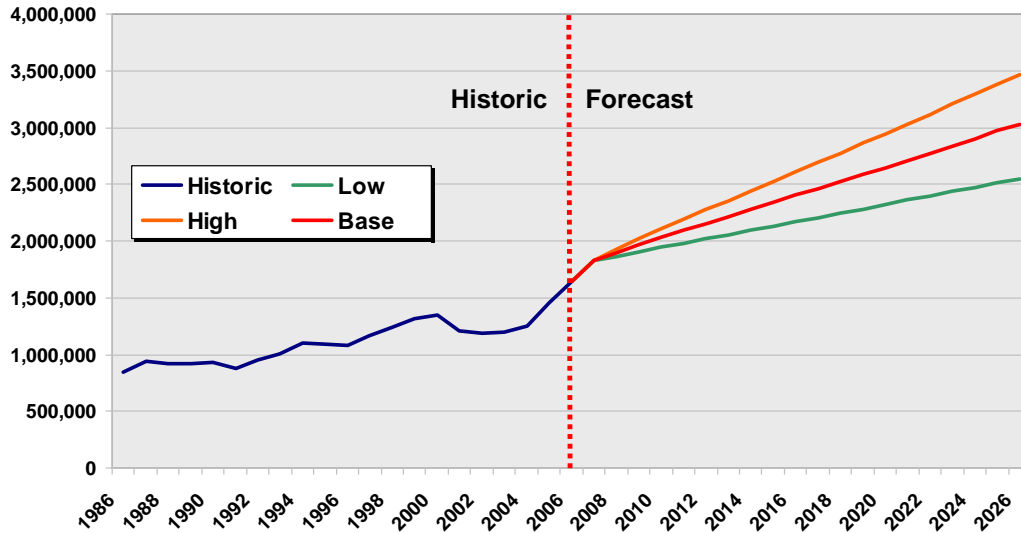
This forecast assumes that the number of based aircraft at RIC will cease to decline in the future, for the same reasons that GA operations will cease to decline. The growing regional economy and growth of locally based businesses, as well as increased disposable income in the community, should have a positive impact on the number of aircraft based at RIC. This forecast projects that the number of based aircraft at RIC will increase at the same rate as GA operations, or 2.5 percent per year.

3.11 SUMMARY OF RESULTS

3.11.1 *Passenger Traffic*

This forecast projects that passenger traffic will increase at an average annual growth rate of between 2.2 percent and 3.8 percent, with a likely “base case” growth rate of 3.1 percent. At these growth rates, passenger enplanements will increase from the 2006 level of 1.65 million to between 2.6 and 3.5 million by 2026, with a likely base case of 3.0 million.

Exhibit 3.3 20-Year Passenger Enplanement Forecast for RIC



Source: Forecasters' projections for this study

Table 3.3 Historic and Forecast Passenger Enplanements (Thousands), 1986 - 2026

	Year	Low	Base	High
	1986	843.7	843.7	843.7
	1991	880.9	880.9	880.9
	1996	1,082.4	1,082.4	1,082.4
	2001	1,208.5	1,208.5	1,208.5
Historic	2006	1,647.7	1,647.7	1,647.7
Forecast	2011	1,979.3	2,093.9	2,195.2
	2016	2,169.3	2,402.7	2,612.8
	2021	2,359.3	2,709.4	3,027.6
	2026	2,549.3	3,031.0	3,468.9

Source: Forecasters' projections for this study

**Table 3.4 Historic and Forecast Passenger Enplanements:
Average Annual Growth Rates, 1986 - 2026**

	Period	Low	Base	High
	1986-1996	2.5%	2.5%	2.5%
	1996-2006	4.3%	4.3%	4.3%
Historic	1986-2006	3.4%	3.4%	3.4%
Forecast	2006-2016	2.8%	3.8%	4.7%
	2016-2026	1.6%	2.4%	2.9%
	2006-2026	2.2%	3.1%	3.8%

Source: Forecasters' projections for this study

The region's growing economy is expected to be a primary driver of passenger traffic growth. The "high" traffic forecast reflects a scenario of continued and significant growth in LCC operations in addition to strong economic growth in the region. Additional traffic stimulation and continuously decreasing yield (average air fare per passenger mile) are also reflected in this forecast.

3.11.2 Air Cargo Traffic

Although cargo volumes have been relatively flat since the late 1990's, this forecast projects that they will begin to increase again, driven by the region's healthy and growing economy. Cargo volumes are expected to increase at approximately the same projected rate for U.S. domestic air cargo as a whole, about 3.5 percent per year:

**Table 3.5 Historic and Forecast Air Cargo Volumes At Richmond
(Millions of Pounds), 1999-2026**

Year	Freight			Mail			Total Cargo		
	Enplaned	Deplaned	Total	Enplaned	Deplaned	Total	Enplaned	Deplaned	Total
Historic 1999	56.1	62.4	118.5	10.2	15.9	26.1	66.4	78.3	144.6
Historic 2006	37.8	54.9	92.7	9.0	11.1	20.2	46.8	66.0	112.9
Forecast 2011	45.9	66.6	112.5	10.9	13.5	24.5	56.8	80.1	137.0
Forecast 2016	54.1	78.5	132.6	12.9	15.9	28.8	67.0	94.4	161.4
Forecast 2021	63.5	92.2	155.7	15.2	18.7	33.9	78.7	110.9	189.6
Forecast 2026	74.6	108.3	182.9	17.8	22.0	39.8	92.4	130.3	222.7

Source: Forecasters' projections for this study

**Table 3.6 Historic and Forecast Air Cargo Volumes:
Average Annual Growth Rates, 1999 – 2026**

Period	Freight			Mail			Total Cargo		
	Enplaned	Deplaned	Total	Enplaned	Deplaned	Total	Enplaned	Deplaned	Total
Historic 1999-2006	-5.5%	-1.8%	-3.4%	-1.8%	-5.0%	-3.6%	-4.9%	-2.4%	-3.5%
Forecast 2006-2016	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%
Forecast 2016-2026	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Forecast 2006-2026	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%

Source: Forecasters' projections for this study

3.11.3 Operations

Both passenger aircraft and freighter operations are expected to grow slower than passenger traffic and air cargo volumes. Much of the passenger traffic growth will likely be absorbed by larger aircraft as well as higher load factors – particularly if the LCC presence at RIC is substantially increased.

Much of the increased cargo traffic at RIC will be absorbed by larger capacity freighter aircraft. In addition, more cargo will be carried in passenger aircraft in the future, as greater numbers of narrowbodies, with far superior cargo carrying capability than regional jets, enter the Richmond market.

This forecast projects that total operations will increase from the 2006 level of 121,000 to between 172,000 and 209,000 by 2026, with a base (recommended) forecast of 191,000. Projected average annual operations growth rates for the 2006-2026 period range between 1.8 percent and 2.8 percent per year, with a base (recommended) projection of 2.3 percent average annual growth.

Table 3.7 Operations Forecast – Low

Thousands

Operation Category	2006	2011	2016	2021	2026	Average Annual Growth
Commercial Passenger Aircraft - Low	71.5	83.7	90.7	96.1	101.5	1.8%
Air Taxi & Other Commercial	12.1	13.8	15.7	17.8	20.3	2.6%
Freighters	3.7	4.1	4.5	5.0	5.5	2.0%
Military	9.7	6.2	6.4	6.4	6.4	-2.1%
GA	23.5	26.6	30.1	34.0	38.5	2.5%
Total	120.5	134.3	147.4	159.3	172.2	1.8%

Source: Forecasters' projections for this study

Table 3.8 Operations Forecast – High

Thousands

Operation Category	2006	2011	2016	2021	2026	Average Annual Growth
Commercial Passenger Aircraft - High	71.5	92.8	109.2	123.3	138.1	3.3%
Air Taxi & Other Commercial	12.1	13.8	15.7	17.8	20.3	2.6%
Freighters	3.7	4.1	4.5	5.0	5.5	2.0%
Military	9.7	6.2	6.4	6.4	6.4	-2.1%
GA	23.5	26.6	30.1	34.0	38.5	2.5%
Total	120.5	143.4	165.9	186.5	208.8	2.8%

Source: Forecasters' projections for this study

Table 3.9 Operations Forecast – Base (Recommended)

Thousands

Operation Category	2006	2011	2016	2021	2026	Average Annual Growth
Commercial Passenger Aircraft - Base	71.5	88.5	100.4	110.4	120.7	2.6%
Air Taxi & Other Commercial	12.1	13.8	15.7	17.8	20.3	2.6%
Freighters	3.7	4.1	4.5	5.0	5.5	2.0%
Military	9.7	6.2	6.4	6.4	6.4	-2.1%
GA	23.5	26.6	30.1	34.0	38.5	2.5%
Total	120.5	139.1	157.1	173.6	191.4	2.3%

Source: Forecasters' projections for this study

3.12 PROJECTED AIRCRAFT MIX

The forecasters expect that average aircraft size will grow noticeably in the future. Passenger turboprop service is expected to decrease or cease entirely. Smaller regional jets with 50 seats and fewer, such as the Canadair CRJ-100/200 and Embraer ERJ-135/140/145, will have significantly less share of airport activity in the future. Currently, these smaller regional jets account for about 60 percent of passenger aircraft operations at RIC. It is expected that their activity will diminish to 35 percent by 2026.

Larger regional jets, with 50 seats and more (the Canadair CRJ-700/900 and Embraer ERJ-170/175/190/195, for example), will make up 26 percent of passenger operations by 2026. This is a significant increase as in 2007 their share was approximately 17 percent.

Narrowbody aircraft will also expand their presence at RIC. Narrowbody aircraft with 100-150 seats, such as the Boeing 737-300/400/500/600/700 and Airbus A318/A319/A320, are expected to increase from 20 percent of passenger aircraft operations in 2007 to 37 percent by 2026.

Larger narrowbodies are expected to slightly increase their presence at RIC as well. Aircraft with more than 150 seats, such as the Boeing 757-200 and Airbus A321 are estimated to increase from approximately 1.2 percent of passenger operations in 2007 to 2.8 percent by 2026.

Finally, RIC is expected to attract a small amount of service by widebodies such as the Boeing 767-200/300 and Airbus A310/A300. These widebodies, with more than 200 seats, are not currently serving Richmond on a scheduled basis. However, by 2026, small/medium widebodies are projected to account for approximately 1 percent of total passenger aircraft operations.

Table 3.10 Projected Percent Distribution of Passenger Aircraft Operations at RIC, By Aircraft Category, 2007-2026

Passenger Aircraft Category	2007	2011	2016	2021	2026
Turboprops	2%	0%	0%	0%	0%
Small Regional Jets (<= 50 Seats)	60%	57%	48%	41%	34%
Large Regional Jets (> 50 Seats, <=100 Seats)	17%	20%	22%	24%	25%
Small/Medium Narrowbodies (> 100 Seats, <=150 Seats)	20%	22%	28%	32%	37%
Large Narrowbodies (> 150 Seats, <=200 Seats)	1%	1%	2%	2%	3%
Small/Medium Widebodies (>= 200 Seats)	0.0%	0.0%	0.5%	0.5%	1.0%
Total	100%	100%	100%	100%	100%

Source: Forecasters' projections for this study

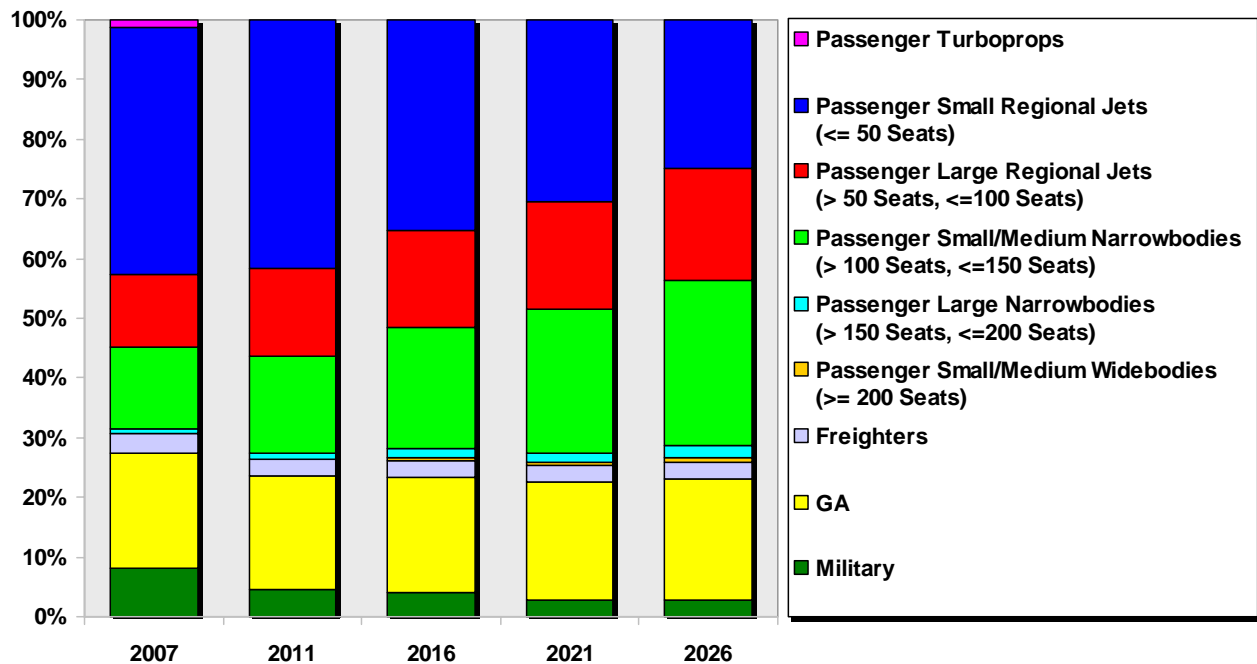
The table and chart below show projected percent distribution of aircraft operations at RIC, including passenger aircraft as well as cargo, military, and General Aviation Aircraft.

**Table 3.11 Projected Percent Distribution Of Total Aircraft Operations At RIC,
By Aircraft Category, 2007-2026**

Aircraft Category	2007	2011	2016	2021	2026
Passenger Turboprops	1%	0%	0%	0%	0%
Passenger Small Regional Jets (<= 50 Seats)	41%	42%	35%	31%	25%
Passenger Large Regional Jets (> 50 Seats, <=100 Seats)	12%	15%	16%	18%	19%
Passenger Small/Medium Narrowbodies (> 100 Seats, <=150 Seats)	14%	16%	20%	24%	28%
Passenger Large Narrowbodies (> 150 Seats, <=200 Seats)	1%	1%	2%	2%	2%
Passenger Small/Medium Widebodies (>= 200 Seats)	0.0%	0.0%	0.4%	0.4%	0.7%
Freighters	3%	3%	3%	3%	3%
GA	20%	19%	19%	20%	20%
Military	8%	5%	4%	3%	3%
Total	100%	100%	100%	100%	100%

Source: Forecasters' projections for this study

**Exhibit 3.4 Projected Percent Distribution of Total Aircraft Operations at Ric,
By Aircraft Category, 2007-2026**



Source: Forecasters' projections for this study

3.13 BASED AIRCRAFT FORECAST

This forecast projects that the number of based aircraft will increase at the same rate as GA operations, or 2.5 percent per year.

Table 3.12 Projected Based Aircraft at RIC, 2006 -2026

Year	Based Aircraft	Avg. Annual % Change
2006E	94	
2011	106	2.5%
2016	120	2.5%
2021	136	2.5%
2026	154	2.5%

Source: Forecasters' projections for this study