

FAA-APO-03-3

**FAA LONG-RANGE  
AEROSPACE FORECASTS  
FISCAL YEARS  
2015, 2020, 2025 and 2030**

**OFFICE OF  
AVIATION POLICY AND PLANS**

**JUNE 2003**

# **FAA LONG-RANGE AEROSPACE FORECASTS FISCAL YEARS 2015, 2020, 2025 and 2030**

## **I. SUMMARY**

To assure consistency in agency planning, the Office of Aviation Policy and Plans provides an extension of its annual 12-year forecasts of aviation demand. Although forecast values are shown for specific years, year-to-year fluctuations are difficult to forecast precisely. Therefore, the projections reflect the trend of average conditions expected during the forecast period.

The Federal Aviation Administration's (FAA) annual 12-year forecast is utilized for both manpower and facility planning as well as for policy and regulatory analysis. The latest 12-year forecast (FAA-APO-03-1, FAA Aerospace Forecasts: Fiscal Years 2003-2014, March 2003) provides projections of aviation activity and FAA workload measures through the year 2014. Periodically, a need arises for projections of aviation demand and activity beyond the published horizon. This document was developed to meet these needs, and contains projections for commercial and general aviation aircraft fleet and hours, air carrier and regional/commuter passenger enplanements (domestic and international), and air carrier air cargo revenue ton-miles (RTMs).

The economic assumptions used in developing these extended forecasts are as follows:

- The economy will grow at a rate comparable to the immediate 12-year period-- 3.1 percent versus 3.2 percent annually;
- inflation will be higher than in the immediate forecast period--averaging 3.4 percent annually compared to 2.2 percent; and
- higher real fuel prices--an increase of 1.7 percent annually compared to a decrease of 1.6 percent annually during the 2003-2014 period;

These assumptions translate into generally lower growth in aviation activity and FAA workload measures during the extended 16-year period (2015 to 2030) than was forecast for the immediate

10-year period (2005 to 2014)<sup>1</sup>. Table 1 shows comparative annual growth rates for 3 time periods: (1) 2003 to 2004; (2) 2005 to 2014; and (3) 2015 to 2030.

## **II. LONG-RANGE FORECAST ASSUMPTIONS**

The long-range aviation forecasts are based on assumptions concerning the future of the commercial and general aviation industries and on the latest macroeconomic projections. For the purposes of this report, the forecast period refers to the long-range outlook, particularly the 2015 to 2030 period. Much of the discussion assumes some familiarity with the forecasts contained in FAA Aerospace Forecasts: Fiscal Years 2003-2014 (March 2003). Copies of this report can be obtained from the FAA Statistics and Forecast Branch, APO-110, by calling (202) 267-3355. The Executive Summary and 49 forecast tables can be found on the Internet at [http://api.hq.faa.gov/apo\\_pubs.htm/](http://api.hq.faa.gov/apo_pubs.htm/).

The above referenced document also addresses the forecast assumptions relating to the events of September 11, 2001, and their impact on projected levels of aviation demand. The following long-range forecasts are extensions of the immediate 10-year forecasts (2005 to 2014). The forecast assumes that this period is distinguished by a return to more normal levels of growth in the demand for aviation products and services. Without going into more detail, the basic impact of the events of September 11 has been to set back traffic projections by about two years compared to last year's forecasts.

### **A. Economic Assumptions**

The long-range economic forecasts are based on the economic projections developed by the Office of Management and Budget (OMB) and Global Insight, Inc. (formerly known as DRI/WEFA Inc). OMB's projections of U.S. economic growth were used for the period 2002-2014 and then extrapolated to 2030. The Global Insight economic projections for U.S. inflation and international economic growth, which extend through the year 2027, have been extrapolated to 2030. The economic forecasts were developed utilizing trend projections and assume that the economy experiences relatively stable growth throughout the 2005-2030 period. Essentially, these projections represent the average of the possible paths that the U.S. and global economy could follow. Using trend projections assumes that: (1) no major shocks will occur (the rapid run-up in oil prices in 2001/02 and subsequent rapid decline in 2003/04 is assumed to be a temporary condition); (2) economic policies remain stable; (3) national and international markets do not experience dramatic shifts in either the supply or demand for economic goods and services; and (4) the forecasts are not capacity constrained, and assume that the FAA and the airlines will develop cost efficient solutions to mitigate any delay/congestion problems. These long-term economic projections represent appropriate points from which to evaluate the effects of variations about the mean of expected values of various activity measures, transportation services, or FAA workload measures.

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<sup>1</sup> A 10-year period is used for comparative purposes since both 2003 and 2004 are distorted due to the continuing effect of the terrorist events of September 11.

**TABLE 1**  
**COMPARISON OF**  
**INTERMEDIATE AND LONG-RANGE FORECASTS**

	<u>Average Annual Percent Change</u>		
	<u>2003 - 2004</u>	<u>2005 - 2014</u>	<u>2015 - 2030</u>
<b><u>AVIATION ACTIVITY</u></b>			
Passenger Enplanements			
U.S. Domestic			
Large Air Carriers	3.4	3.5	3.2
Regionals/Commuters	8.3	4.8	3.5
International*	4.7	4.6	3.9
Air Cargo Freight RTMs			
Domestic	4.5	3.9	3.5
International	4.9	5.9	4.4
Aircraft Fleets			
Air Carrier	(1.0)	2.6	2.9
Regional/Commuter**	7.0	3.3	2.5
Cargo Jets	2.3	3.6	3.0
General Aviation	0.5	0.7	0.5
Hours Flown			
Air Carrier***	1.0	3.5	2.9
Regional/Commuter (Block Hrs)	7.1	4.2	2.7
General Aviation	1.3	1.6	1.2
Pilots			
Total	0.7	1.5	1.2
Instrument Rated	1.0	1.8	1.2
<b><u>FAA WORKLOAD MEASURES</u></b>			
Tower Operations****	1.3	1.7	1.7
Instrument Operations****	1.1	2.0	1.9
IFR Aircraft Handled	1.3	2.1	2.1
Flight Service Stations	(0.3)	0.6	0.6

\* Total international passengers to and from United States—U.S. and Foreign Flag Carriers.

\*\* Includes regional jets.

\*\*\* Includes both passenger and cargo operations.

\*\*\*\* Includes combined activity at FAA and contract towers.

The long-range economic outlook from Global Insight is relatively unchanged from the 2002 projections. The forecasting service is fairly consistent in its expectations for growth in economic output, prices, and interest rates. The major economic assumptions are addressed in more detail below.

### **Real Gross Domestic Product**

The U.S. economy is expected to grow at a moderate rate of 3.1 percent annually during the 28-year forecast period. Growth in real gross domestic product (GDP), adjusted for price changes and expressed in 1996 dollars, is projected to average 3.1 percent annually over the extended 16-year (2015 to 2030) forecast period. This is comparable to both the historic rate of growth (2.9 percent between 1974 and 2000) and the projected growth for the immediate 12-year forecast period (3.2 percent between 2002 and 2014).

International economic growth is expected to grow at rates comparable to those of the U.S. during the 28-year forecast period. World real GDP is projected to average 3.3 percent annually for the immediate 12-year forecast period and 2.8 percent annually over the extended 16-year forecast period. These rates of growth are comparable to the historic rate of growth of 2.8 percent between 1980 and 2000.

### **Consumer Price Index**

Inflation is not expected to return to the high rates experienced during the latter half of the 1970s and early 1980s (8.7 percent annual growth between 1972 and 1982) during the entire 28-year forecast period. Global Insight's opinion is that there will be little upward pressure from real wage rates and commodity prices, and that the Federal Reserve is committed to controlling inflation while allowing the money supply to grow enough to ensure growth in output. The consumer price index is projected to increase at an average annual rate of 2.9 percent a year during the 28-year time period--2.2 percent during the immediate period, but increasing to 3.4 percent over the extended forecast period.

### **Fuel Prices**

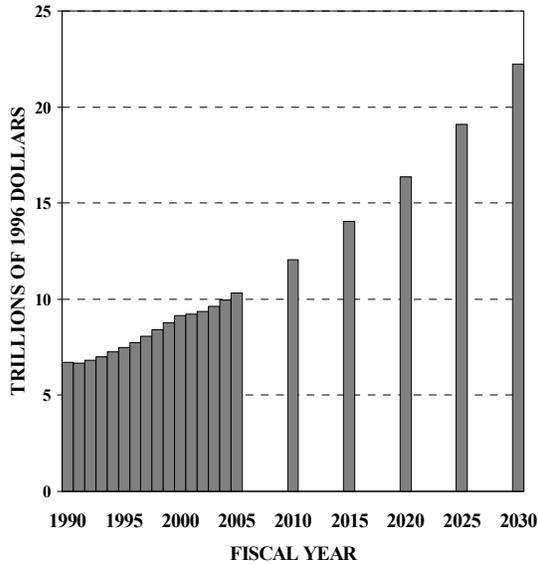
Fuel prices, as measured by the Oil and Gas Deflator, are forecast to increase at an annual rate of 3.1 percent over the 28-year forecast period—slightly higher than the expected overall inflation rate. Between 2002 and 2014, nominal fuel prices are projected to increase 0.5 percent annually, a 1.6 percent decline annually in real terms. Between 2014 and 2030, nominal fuel prices are forecast to increase 5.1 percent annually, an increase of 1.7 percent annually in real terms.

### **Interest Rates**

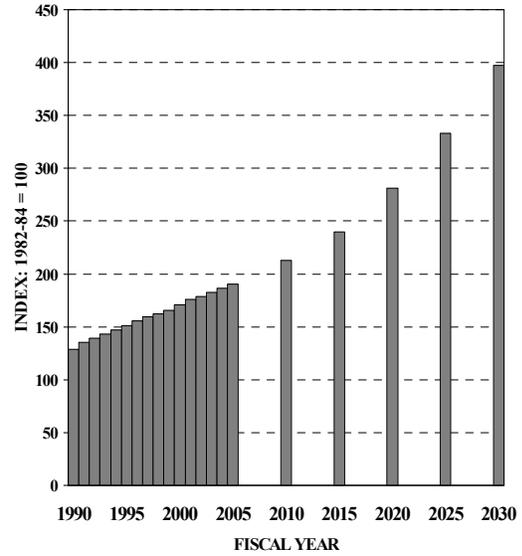
Long-term nominal interest rates are tied to inflationary expectations. The Federal Reserve is expected to pursue a monetary policy that keeps inflation in check and allows for sufficient money growth to sustain economic output gains. Given the long-term outlook for inflation, long-term interest rates are expected to remain fairly stable during both the immediate and extended forecast periods. Interest rates are expected to increase from 5.5 percent in 2002 to 5.9 percent in 2014 and rise to 7.5 percent by 2030.

# ECONOMIC VARIABLES FORECASTS

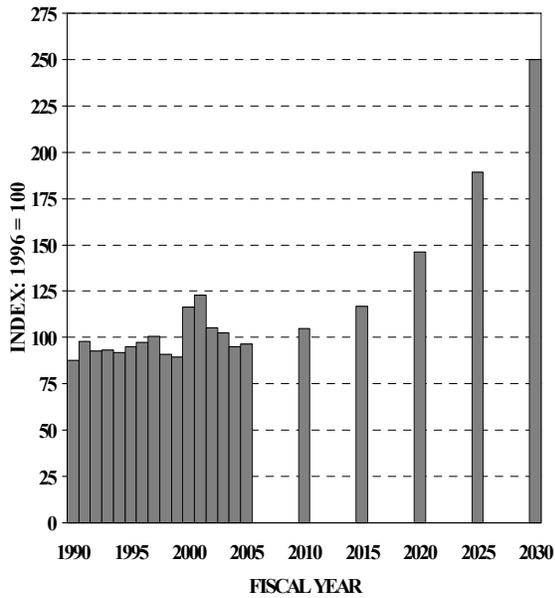
## REAL GDP



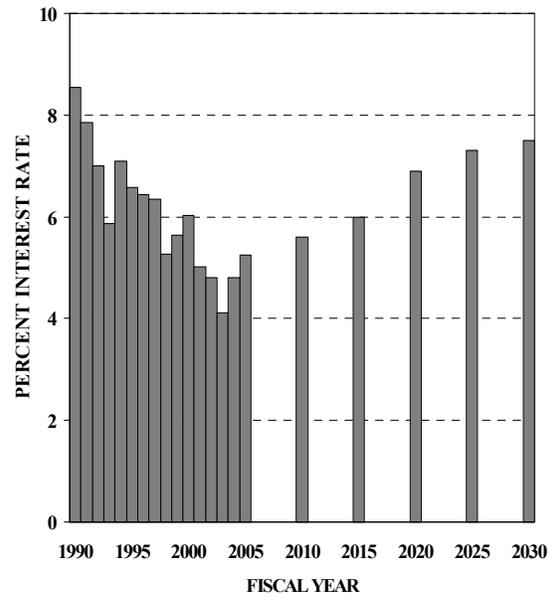
## CONSUMER PRICE INDEX



## OIL AND GAS DEFLATOR



## 10 YEAR GOVERNMENT BONDS



## **B. Operational Variables**

The long-range forecasts of various operational variables discussed below are, for the most part, a continuation of the trends discussed in greater detail in *FAA Aerospace Forecasts: Fiscal Years 2003-2014*. As with the economic projections, these forecasts reflect an average trend of the possible paths that the various operational variables could follow. These long-term projections represent appropriate points from which to evaluate the effects of variations about the expected values of various activity measures, transportation demand and services, or FAA workload measures.

### **Air Carrier Passenger Yield**

The current 12-year and extended 16-year forecasts assume that real domestic passenger yields (expressed as revenue per passenger mile) will continue its historical long-term gradual downward trend. Real domestic passenger yields are projected to decline by 0.9 percent annually over the 28-year period. The downward trend in real domestic yields is based on the assumptions of continued strong competition in the industry, and continued improvements in efficiency and productivity.

There has been a long-term decrease in international real yields similar to that experienced in the domestic market. However, real yields in international markets are generally lower than in the domestic market, because of lower operating costs. These lower costs are associated with longer average stage length and with the use of larger aircraft, which tend to have lower seat mile costs. It is assumed that productivity and competition will continue to expand in international markets over the forecast period, and this will push real yields lower. Market efficiencies will be achieved with the use of more productive aircraft, expanded open-skies agreements, and extended global alliances. Total international real yields for U.S. flag carriers are expected to decline 0.6 percent annually through 2014. Over the 28-year period, international yields, adjusted for inflation, are expected to decline 0.4 percent a year.

### **Average Aircraft Size**

The average number of seats per aircraft for the U.S. air carrier domestic fleet is projected to grow modestly throughout the immediate 12-year forecast period. Increases in average seats per aircraft in the near term will be achieved through retirement of older, smaller aircraft. As a result, the increase in seats per aircraft will be somewhat lower than the 12-year average. By 2005 most of the smaller hush-kitted stage-2 aircraft will have either been replaced with generally larger stage-3 aircraft or retired. Over the immediate 12-year forecast period, the average seats per aircraft for the domestic fleet is expected to grow by 0.9 seats per year--from 147.9 in 2002 to 159.2 in 2014.

The average seating capacity of the domestic air carrier fleet is expected to continue to increase over the extended 16-year forecast period. The new aircraft entering the fleet during this period are expected to be somewhat larger than the aircraft being replaced. Therefore, the average seats per aircraft for the domestic air carrier fleet is expected to increase by one seat annually over the extended forecast period, reaching 175.2 seats in 2030.

The average number of seats per aircraft for the U.S. air carrier international fleet is expected to grow modestly over the 28-year forecast period as the U.S. carriers expand non-stop city-pair service into deep South America, Europe, and Asia. Although U.S. carriers are expected to employ larger two-engine, two-aisle aircraft in Atlantic and Pacific markets, the relatively rapid growth of the Latin American markets, where aircraft seating capacity is significantly smaller, will limit the increases in seats per aircraft. The average number of seats per aircraft in international markets is expected to increase from 228.5 seats in 2002 to 238.5 seats in 2030.

The average seating capacity of regional/commuter aircraft is forecast to increase by 0.6 seats annually between 2003 and 2014 (from 42.8 to 50.4 seats). This trend is expected to continue over the extended forecast period, with the average seating capacity of regional/commuter aircraft averaging approximately 58.4 seats in the year 2030. This reflects the continued introduction of greater numbers of regional jet aircraft (up to 70 seats) into the regional/commuter fleet. The extended range and greater speed offered by these aircraft are expected to expand the market potential for the regional industry, and continue to blur the distinction between regional/commuters and the large commercial operators.

### **Load Factor**

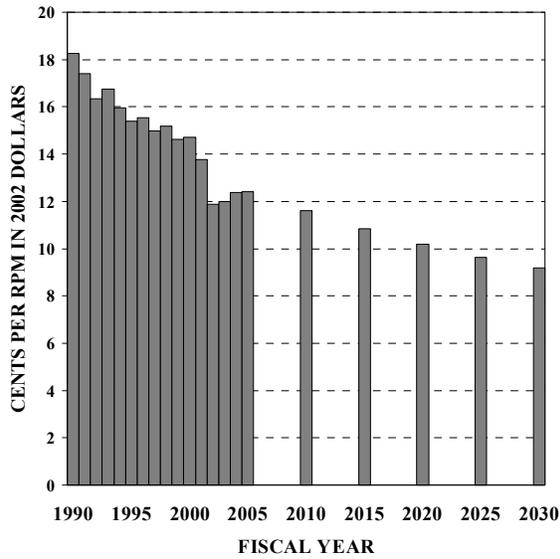
Domestic air carrier load factors are projected to remain at their current historical high levels throughout the remainder of the immediate and extended forecast periods. During the past several years, airline scheduling policies have allowed air carriers to rapidly adjust capacity levels to more closely correspond to changes in passenger demand. This ability to make rapid adjustments to meet changing demand conditions has enabled the airlines to push up load factors to all-time highs. It is expected that present fleet plans will provide capacity levels that should maintain the air carrier load factors at between 72 and 76 percent throughout the forecast period.

As in domestic markets, the wide range of aircraft capable of international flight also allows U.S. airlines to adjust their international capacity levels to changing levels of demand. The international load factor is also forecast to remain relatively stable during the 28-year forecast period, increasing slightly from 74.6 percent in 2002 to 76.5 percent in 2030.

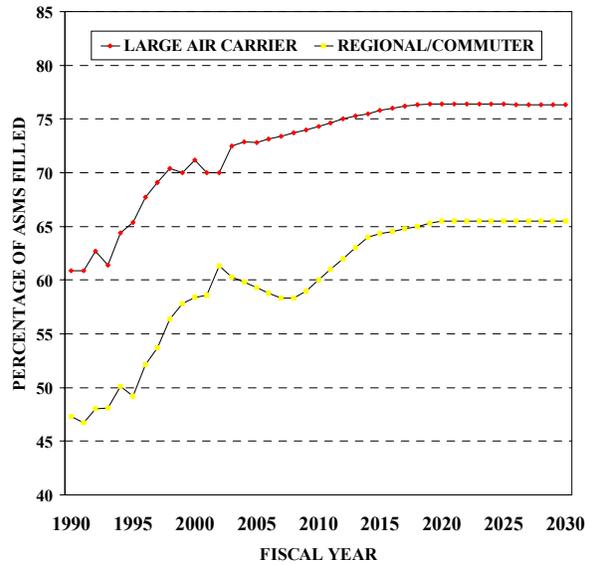
Regional/commuter load factors are projected to increase from 61.3 percent in 2002 to 64.0 percent in 2014. During the extended forecast period, regional/commuter load factors are expected to rise to 65.6 percent by 2030. The higher load factors result from the continued introduction of larger regional jet aircraft and the need to cover the higher cost per seat mile associated with these aircraft.

# OPERATIONAL VARIABLES FORECASTS

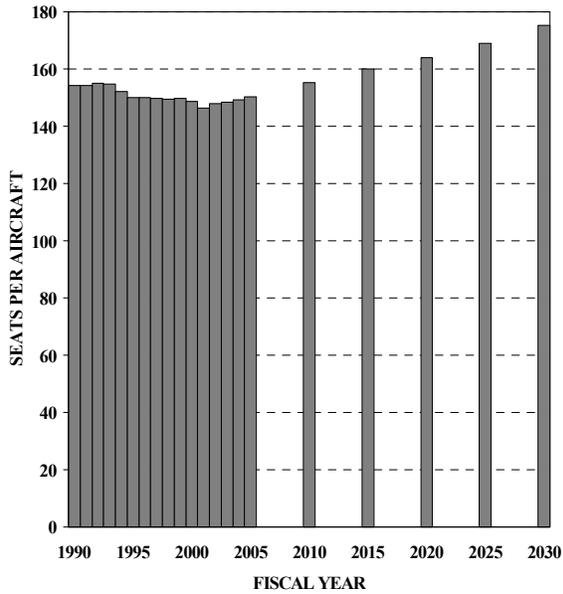
**REAL DOMESTIC PASSENGER YIELD**



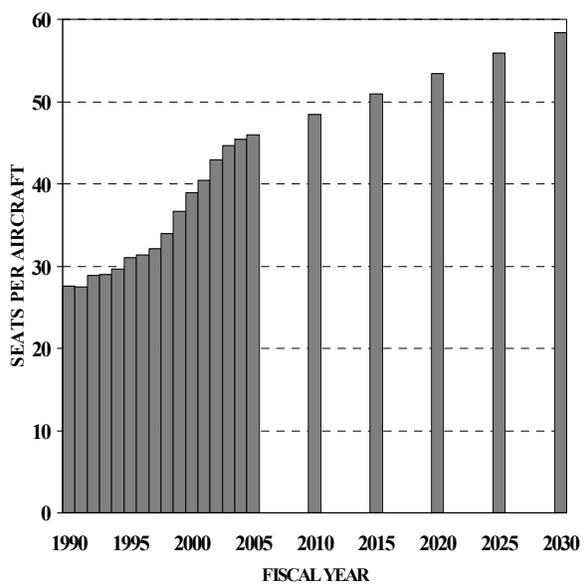
**DOMESTIC PASSENGER LOAD FACTOR**



**AVERAGE SEATING CAPACITY DOMESTIC AIR CARRIER AIRCRAFT**



**AVERAGE SEATING CAPACITY REGIONAL/COMMUTER AIRCRAFT**



### **III. LONG-RANGE AVIATION ACTIVITY FORECASTS**

Forecasts of various measures of aviation activity for 2002 and 5-year increments between 2002 and 2030 are provided in Table 2, page 14. A discussion of some of these measures of aviation activity follows in the paragraphs below.

#### **A. Passenger Enplanements and Cargo**

##### **Air Carrier**

Air carrier demand, as measured by domestic passenger enplanements, is projected to continue to grow faster than the general economy. For the period 2005 to 2014, domestic passenger enplanements are forecast to increase at an average annual rate of 3.8 percent compared to a 3.1 percent annual growth rate in real GDP. Over the extended forecast period (2015-2030), domestic passenger enplanements are projected to increase at an average annual rate of 3.3 percent compared to real GDP growth of 3.1 percent annually.

Forecasts of total international passenger traffic to and from the U.S. (U.S. and foreign flag carriers), are provided between the United States and three world travel areas--Atlantic, Latin America (including Mexico and the Caribbean), and the Pacific/Far East--as well as for U.S./Canadian transborder traffic. Total passenger traffic between the United States and the rest of the world is expected to grow from 122.0 million in 2002 to 389.8 million in 2030, an average annual growth rate of 4.2 percent. Passenger traffic in the Latin American markets is expected to post the strongest growth at 4.7 percent annually through 2030. The second fastest growing market will be the Pacific market that is projected to grow at 4.4 percent annually during the same time period. The Atlantic market is forecast to grow at 4.1 percent annually through 2030, followed by Transborder traffic at 2.9 percent for the 28-year forecast period.

##### **Regionals/Commuters**

The regional/commuter industry is projected to continue to grow at a relatively faster pace than the large air carriers through both the immediate and extended forecast periods, averaging 5.6 and 3.5 percent, respectively. A large part of the growth during the early years of the immediate forecast period results from a continuation of the shift of low-density, short-haul markets from the larger air carriers to their commuter code-share partners, a trend that was accelerated in the aftermath of the September 11<sup>th</sup> terrorist attacks. However, most of the growth during the extended forecast period is expected to result from new markets created by the expanded use of regional jet aircraft.

The introduction and popularity of regional jets is expected to open up new growth opportunities in thin, intermediate range markets that cannot be served economically with large jet aircraft. The speed and range of the regional jet also offers the opportunity for more point-to-point (hub bypass) operations in markets that are currently served only via connecting flights through large hubs. There are currently 16 regional/commuter operators operating regional jet aircraft. This, together with the public preference for jet aircraft, should ensure that the regional/commuter industry should continue to grow more rapidly than the large air carriers.

## **Air Cargo**

The air cargo forecast discussed here is comprised of domestic and international revenue freight/express and mail carried by U.S. commercial air carriers and is measured by revenue ton-miles (RTMs). Air cargo is moved in the bellies of passenger aircraft and in dedicated all-cargo aircraft on both scheduled and non-scheduled service.

In 2002, combined domestic and international RTMs flown by U.S. commercial air carriers totaled 27.3 billion. By 2014 this figure is projected to reach 49.0 billion, an average annual increase of 5.0 percent. During the extended forecast period, total domestic and international cargo RTMs is projected to total 92.6 billion RTMs, an average annual increase of 4.0 percent. Over the entire 28-year period, growth in total freight/express RTMs is expected to average 4.5 percent annually.

Domestic RTMs are forecast to increase from 13.1 billion in 2002 to 36.4 billion in 2030, an average annual increase of 3.7 percent over the 28-year forecast period. International RTMs are forecast to grow at a faster rate than domestic RTMs, increasing from 14.2 billion in 2002 to 56.2 billion in 2030, averaging 5.0 percent growth annually for the 28-year forecast period. This expectation is based on the projected strong economic growth in world GDP, especially in the Latin American and Asian regions.

## **B. Aircraft Fleets and Hours Flown**

### **Commercial Air Carriers**

The commercial air carrier passenger jet fleet is forecast to increase at an annual rate of 1.9 percent from 4,180 aircraft in 2002 to 5,261 aircraft in 2014. The size of the fleet declines in 2003 and 2004 as carriers due to the lingering effects of the September 11<sup>th</sup> terror attacks and the subsequent restructuring of the industry. Starting in 2005, the passenger jet fleet grows at an annual rate of 2.6 percent per year through 2014. By far the largest increase, in terms of number of aircraft, is projected to occur in the two-engine narrowbody aircraft category, which is expected to grow by an average of over 80 aircraft (2.1 percent) annually. By 2014, the two-engine narrowbody aircraft category is expected to total 4,323 units and account for 82.2 percent of the fleet. This trend is also expected to continue throughout the extended forecast period.

Between 2015 and 2030, the air carrier fleet is forecast to increase at an average annual rate of 2.9 percent, reaching a total of 8,284 aircraft. Again, the largest growth in the fleet is expected to occur in the two-engine narrowbody aircraft category. In 2030, this category is forecast to grow to 7,022 units and account for almost 85 percent of the fleet.

The cargo jet fleet is projected to increase at an annual rate of 3.4 percent during the immediate 12-year forecast period, from 1,034 aircraft in 2002 to 1,547 in 2014. During the extended 16-year forecast period, the cargo jet fleet is forecast to increase at a 3.2 percent average annual rate reaching 2,482 aircraft by 2030. Over the entire 28-year forecast period, the cargo jet fleet is forecast to grow at a faster average annual rate than the passenger fleet (3.2 percent compared to

2.5 percent), reflecting the expected higher sustained growth in cargo traffic--especially international traffic.

The regional/commuter fleet is expected to grow from its current 2,521 aircraft in 2002 to 6,012 by the year 2030. This is an average annual growth rate of 3.2 percent over the 28-year forecast period, or an increase of approximately 125 aircraft annually. This includes the smaller regional jets (30 to 70 seats), which will be introduced into the fleet in significant numbers over the forecast period.

The number of hours flown by the large commercial passenger and cargo jet aircraft is forecast to increase by 3.1 percent annually between 2003 and 2014, and by 2.9 percent annually between 2015 and 2030. The immediate and extended range fleet forecasts imply that U.S. air carriers will use larger aircraft and operate at continued high load factors to accommodate increasing passenger demand. The forecasts of hours flown imply that the average utilization of the U.S. fleet will increase gradually over the 28-year forecast period. Regional/commuter block hours are forecast to increase at an average annual rate of 3.6 percent during the same time period--from 5.5 million hours in 2002 to 14.8 million in 2030.

### **General Aviation Aircraft & Hours Flown**

The number of active general aviation aircraft is expected to increase from 211,040 aircraft in 2002 to 229,490 in 2014, and then expand to 249,070 by 2030. This represents an average annual growth of 0.7 percent during the immediate forecast period and 0.5 percent over the extended forecast period. The piston engine portion of the general aviation fixed-wing aircraft fleet is forecast to increase by 0.2 percent during both the immediate and extended forecast periods. Fixed-wing turbine powered general aviation aircraft are expected to increase 2.8 percent annually between 2003 and 2014, and by 2.2 percent during the 2015 to 2030 period. The higher growth rate for the turbine portion of the fleet is based on the expectations of a greater business and corporate use of general aviation aircraft in an expanding U.S. economy.

Growth in general aviation flight hours is forecast to increase at a faster rate than the active fleet. General aviation activity is very sensitive to changes in fuel price and variations in the rate of economic growth. Based on the assumptions of sustained economic growth, relative stability in fuel prices, and the continued growth in fractional ownership programs and corporate flying, it is expected that aircraft utilization rates will return to or surpass the higher levels experienced prior to the 1990-1991 economic recession. As such, general aviation flight hours are forecast to increase from 29.5 million in 2002 to 35.3 million in 2014, and to 43.0 million in 2030-- 1.5 and 1.2 percent annual growth, respectively.

The positive forecasts for general aviation fleet and flight hours are heavily dependent on the assumptions related to continued economic growth and price stability. However, equally important to future growth are continued investment in plant expansion and production by general aviation manufacturers and the success of industry programs, such as "GA Team 2000," to foster the growth in number of student pilots. If the general aviation industry falters in its efforts to stimulate the production of new general aviation products and services, and/or the growth in the number of student pilots, the outlook for the active fleet, hours flown, and general

aviation activity at FAA air traffic facilities could be considerably lower than the current projections.

### **C. Pilot Population**

The total pilot population is forecast to increase from 661,358 in 2002 to 935,305 by the year 2030, an average annual growth rate of 1.2 percent over the 28-year forecast period. Much of the growth results from the continuing demand for airline transport pilots. Additionally, recent industry program initiatives designed to promote the benefits of general aviation flying to businesses and the public, to stimulate growth in the number of new student pilots, and to develop an improved flight training infrastructure are also expected to contribute to the growth in the pilot population. During this same time period, the number of instrument rated pilots is expected to increase from 317,389 to 469,800. The percentage of instrument rated pilots increases from 48.0 percent in 2002 to 50.2 percent in 2030.

### **D. Total Aviation Activity**

Total civil aircraft activity at towered airports (266 FAA and 217 contract in 2002) and non-towered airports (based on projections for just under 4,000 public use airports in the Terminal Area Forecast database) is forecast to reach 162.8 million by the year 2030, an average annual growth of 0.6 percent over the activity level forecast for 2014 (137.7 million operations). This in turn is an average annual growth rate of 1.1 percent over the 121.3 million total aircraft operations recorded in 2002.

Commercial aircraft operations (the sum of air carrier and commuter/air taxi) at all U.S. airports, towered and non-towered, are projected to increase from 27.9 million in 2002 to 35.2 million in 2014, and to 47.5 million in 2030. These forecasts imply an average annual growth rate of 2.0 percent over the immediate forecast period, and 1.9 percent over the extended forecast period.

The number of general aviation operations at towered and non-towered airports is forecast to increase from 87.7 million in 2002 to 96.7 million in 2014 and to 109.6 million in 2030. The average annual growth rate for both the immediate forecast and the extended forecast period is 0.8 percent. Much of the growth is the result of increased use of the turbine fleet for business/corporate related flying.

**TABLE 2**

**LONG-RANGE FORECASTS**  
**AVIATION DEMAND AND ACTIVITY**

	<b>Actual</b>	<b>March 2003 Forecast</b>			<b>Long Range Forecast</b>			
	<b>2002</b>	<b>2003</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>Enplanements and</b>								
<b><u>Air Cargo (In Millions)</u></b>								
Enplanements								
Commercial Air Carriers								
Domestic*	488.8	498.8	540.4	637.5	768.0	891.4	1,045.2	1,238.0
International**	122.0	127.7	140.8	177.2	219.3	268.0	324.1	389.8
Regional/Commuter	90.7	97.1	114.0	146.4	181.1	218.7	259.9	305.4
Freight/Express RTMs	25.8	25.2	29.7	38.8	51.2	63.2	76.8	92.6
<b><u>Aircraft Fleets</u></b>								
(in Thousands)								
Air Carrier-Large Jets	4.2	4.1	4.2	4.7	5.4	6.3	7.2	8.3
Cargo-Jet Aircraft	1.0	1.1	1.1	1.4	1.6	1.8	2.1	2.5
Regional/Commuter	2.5	2.7	3.0	3.7	4.2	4.6	5.3	6.0
Regional Jets	1.0	1.3	1.7	2.5	3.0	3.6	4.3	5.0
Turboprops	1.5	1.4	1.3	1.1	1.2	1.0	1.0	1.0
General Aviation								
Piston Engine	162.7	162.8	163.5	166.0	167.8	169.6	170.9	172.3
Turbine Engine	14.6	14.9	15.6	18.3	20.8	23.4	26.1	28.9
Helicopters	6.8	6.8	6.9	7.2	7.4	7.7	7.8	8.0
Experimental/Other	26.9	26.9	29.4	32.3	34.8	36.8	38.5	39.9
<b><u>Hours Flown</u></b>								
(In Millions)								
Air Carrier	12.9	12.8	13.7	16.3	19.4	22.4	25.8	29.9
Regional/Commuter***	5.5	5.9	6.6	8.3	9.9	11.2	12.9	14.8
General Aviation	29.5	29.8	30.7	33.2	35.8	38.2	40.6	43.0
<b><u>Active Pilots</u></b>								
(In Thousands)								
Total	661.4	664.8	680.1	736.2	787.5	836.4	885.4	935.3
Instrument Rated	317.4	319.6	329.3	362.5	391.3	417.4	442.8	469.8
<b><u>Estimated U. S. Civil Operations</u></b>								
(In Millions)								
Commercial	27.9	28.3	29.6	32.7	35.8	39.1	43.0	47.5
General Aviation	87.7	88.5	90.0	93.7	97.4	101.2	105.3	109.6

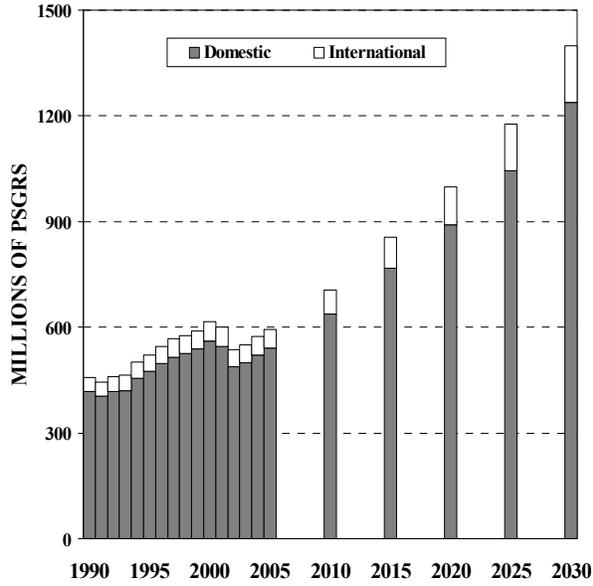
\* Large Commercial Carriers only (excluding Form 41 Commuters)

\*\* Total international passengers to and from the United States—U.S. and Foreign Flag carriers

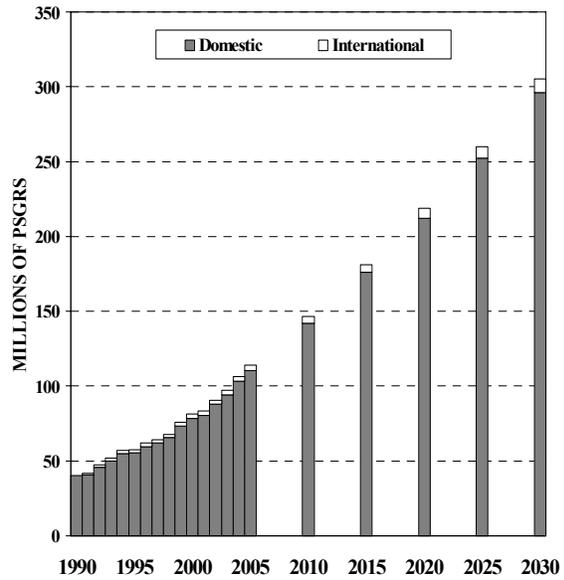
\*\*\* Block Hours

# AVIATION ACTIVITY FORECASTS

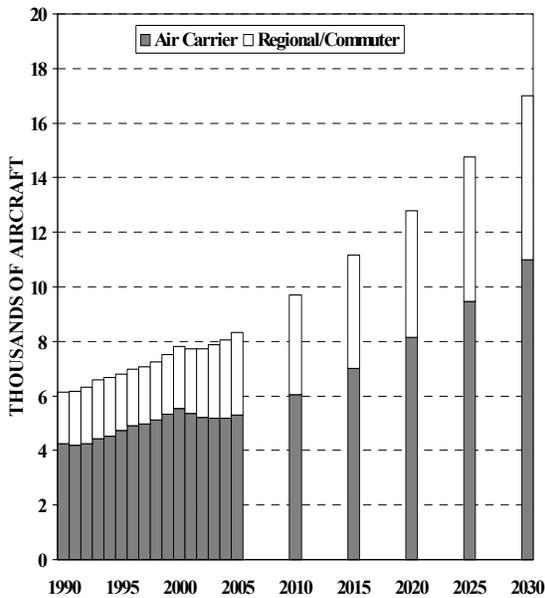
## AIR CARRIER ENPLANEMENTS



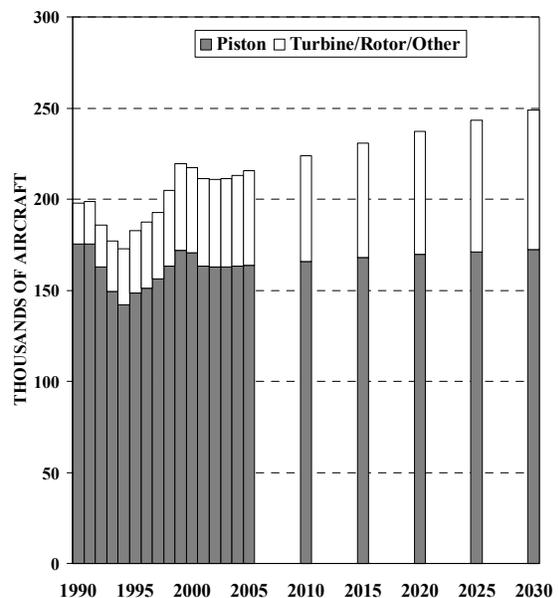
## REGIONAL/COMMUTER PASSENGER ENPLANEMENTS



## COMMERCIAL AIRCRAFT FLEET



## GENERAL AVIATION FLEET



## **IV. LONG-RANGE WORKLOAD MEASURE FORECASTS**

Forecasts of FAA workload measures by user groups for 2003 and 5-year increments between 2003 and 2030 are provided in Table 2, page 19. A discussion of the forecasts follows in the paragraphs below.

### **A. Towered Operations**

At the end of FY 2002 the number of FAA towers totaled 266, down from 402 in 1994. During this same period of time, the number of FAA contract towers has increased from 33 to 217. An additional 7 contract towers are expected to be added in 2003, bringing the total number of contract towers to 224. Given the uncertainty about current and future year conversions and additions, the forecasts presented in this document are combined forecasts independent of the distinction between FAA and contract tower status.

Aircraft operations at combined FAA and contract towered airports are forecast to total 79.1 million in 2014 and 103.9 million in 2030—an average annual growth rate of 1.7 percent over the 28-year forecast period. Most of the growth is expected to come in commercial activity, which is projected to grow 2.5 percent annually during the immediate forecast period and 2.4 percent annually during the extended forecast period. The slower growth in commercial activity relative to enplanements (3.9 and 3.4 percent during the immediate and extended forecast periods) is due to a combination of continued high load factors, larger aircraft, and longer passenger trip lengths.

Although regional/commuter enplanements increase at a faster rate than the larger air carriers over the 28-year forecast period (4.4 percent compared to 3.5 percent), commuter/air taxi operations increase just slightly faster than air carrier operations (2.5 percent compared to 2.4 percent). The commuter/air taxi activity growth is largely due to the large numbers of the regional jet aircraft that are expected to enter the regional/commuter fleet over the forecast period. As such, regional/commuter average aircraft size, load factors, and passenger trip lengths all increase at significantly faster rates than do those of the larger air carriers.

General aviation activity, which accounted for 57.9 percent of combined tower activity in 2002, grows at a considerably slower pace relative to commercial activity over the 28-year forecast period—1.3 percent, for both the immediate and extended forecast periods. In the year 2030, general aviation is expected to account for 51.6 percent of combined tower activity. Military activity is projected to remain constant at the 3.1 million operations forecasted for 2004 through the balance of the immediate and the extended forecast periods.

## **B. Instrument Operations**

Instrument operations at combined FAA and contract towered airports are forecast to total 61.9 million in 2014 and 83.2 million in 2030, an average annual growth rate of 1.9 percent during both the immediate and extended forecast periods. Most of the growth is expected to come from commercial activity, which is projected to grow 2.5 percent annually during the immediate and 2.4 percent annually during the extended forecast period. Air carrier instrument activity is forecast to grow 2.2 percent annually during the immediate forecast period and 2.5 percent during the extended forecast period. Commuter/air taxi activity is forecast to increase at a 2.8 percent annual rate during the immediate forecast period and 2.2 percent annually over the extended forecast period.

General aviation activity is projected to increase at a slower pace, averaging 1.4 percent through the immediate forecast period and 1.3 percent during the extended forecast period. Military activity is forecast to remain constant at the 3.6 million operations recorded in 2003.

Commercial activity is expected to increase from 53.1 percent of total instrument activity at combined FAA and contract towers in 2002 to 61.6 percent by the year 2030.

## **C. ARTCC Aircraft Handled**

The number of aircraft handled at FAA en route traffic control centers is forecast to reach 55.4 million in 2014 and 77.1 million in 2030, an average growth rate of 2.0 percent for the immediate forecast period and 2.1 percent over extended time period. Most of the growth occurs in the number of commercial aircraft handled, which increases by 2.4 percent annually during both of the two forecast periods. The number of air carrier aircraft handled increases by an average annual rate of 2.4 percent over the 28-year forecast period—or 2.2 percent and 2.5 percent, respectively, over the immediate and extended time periods. The number of commuter/air taxi aircraft handled is forecast to increase by 2.8 percent annually during the immediate forecast period and 2.2 percent over the extended forecast period—averaging 2.5 percent over the entire 28-year period.

The number of general aviation aircraft handled at FAA en route centers increases at a slower rate over the two forecast periods, 1.4 and 1.3 percent annually during the respective forecast periods. The number of military aircraft handled is forecast to remain constant at the 3.9 million recorded in 2002 through 2030.

By the end of the 28-year forecast period, commercial activity is expected to account for 79.6 percent of the total center activity, up from 72.3 percent in 2002.

## **D. Flight Services**

The number of services provided by FAA flight service stations is forecast to total 28.6 million in 2014 and 28.4 million in 2030, an annual decline of 0.1 percent over the 28-year forecast period. The projected decline in services provided by FAA flight service stations reflects the greater use of automated and alternative sources for flight services that are not provided directly by FAA flight service stations specialist.

The average annual growth rates for each of the three flight service categories for the immediate and extended forecast periods are: flight plans originated: up 0.0 and 0.4 percent; pilot briefs down 0.3 and 0.2 percent; and number of aircraft contacted; down 0.8 percent and 1.0 percent for the two forecast periods.

Automated services provided through the Direct User Access Terminal System (DUATS) are forecast to grow throughout the forecast periods. DUATS services are projected to increase to 19.6 million in 2014 and to 24.9 million in 2030, a 1.5 percent annual growth rate for both forecast periods. During the 28-year period, the combined FSS and DUATS services are forecast to increase at an average annual rate of 0.5 percent.

These forecasts of FSS and DUATS services assume that there will be no change in the current definitions of flight service measures or any change in the manner in which they are delivered to the general aviation pilot. There is, however, significant uncertainty concerning the impact of technology on the set of flight services to be provided by the FAA in the future. As more specific information becomes known about the future flight service system the forecasts will be adjusted accordingly.

**TABLE 3**

**LONG-RANGE FORECASTS**  
**FAA WORKLOAD MEASURES**

(In Millions)

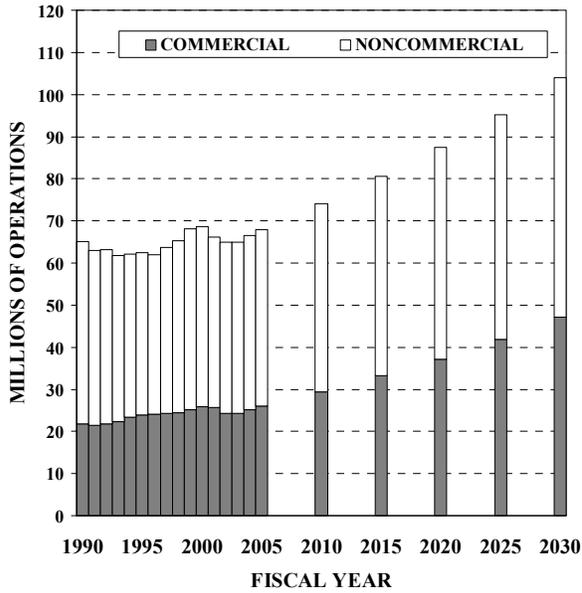
	Actual	March 2003 Forecast			Long Range Forecast			
	2002	2003	2005	2010	2015	2020	2025	2030
<b><u>Tower Operations*</u></b>								
Total	<u>64.9</u>	<u>64.9</u>	<u>67.9</u>	<u>74.0</u>	<u>80.6</u>	<u>87.4</u>	<u>95.2</u>	<u>103.9</u>
Itinerant	<u>47.2</u>	<u>47.2</u>	<u>49.7</u>	<u>54.7</u>	<u>60.1</u>	<u>65.7</u>	<u>72.2</u>	<u>79.5</u>
Air Carrier	13.2	12.9	13.7	15.4	17.6	19.7	22.4	25.5
Commuter/Air Taxi	11.0	11.3	12.2	14.0	15.6	17.4	19.5	21.7
General Aviation	21.4	21.8	22.1	23.7	25.3	27.0	28.8	30.7
Military	1.4	1.5	1.6	1.6	1.6	1.6	1.6	1.6
Local	<u>17.6</u>	<u>17.7</u>	<u>18.2</u>	<u>19.3</u>	<u>20.4</u>	<u>21.7</u>	<u>23.0</u>	<u>24.5</u>
General Aviation	16.2	16.2	16.7	17.8	18.9	20.2	21.5	23.0
Military	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
<b><u>Instrument Operations *</u></b>								
Total	<u>49.6</u>	<u>49.3</u>	<u>51.9</u>	<u>57.3</u>	<u>63.2</u>	<u>68.9</u>	<u>75.7</u>	<u>83.2</u>
Air Carrier	14.4	14.1	15.0	16.8	19.2	21.5	24.4	27.7
Commuter/Air Taxi	11.9	12.2	13.2	15.2	16.9	18.9	21.1	23.5
General Aviation	19.7	19.4	20.1	21.8	23.4	25.0	26.6	28.4
Military	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
<b><u>ARTCC Aircraft Handled</u></b>								
Total	<u>43.7</u>	<u>43.4</u>	<u>45.8</u>	<u>50.8</u>	<u>56.6</u>	<u>62.3</u>	<u>69.3</u>	<u>77.1</u>
Air Carrier	22.8	22.4	23.7	26.6	30.5	34.1	38.7	44.0
Commuter/Air Taxi	8.8	9.0	9.8	11.2	12.5	13.9	15.6	17.4
General Aviation	8.2	8.1	8.4	9.1	9.7	10.4	11.1	11.8
Military	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
<b><u>FSS Flight Services</u></b>								
Total	<u>29.4</u>	<u>28.9</u>	<u>28.7</u>	<u>28.6</u>	<u>28.6</u>	<u>28.5</u>	<u>28.5</u>	<u>28.4</u>
Pilot Briefs	7.5	7.3	7.3	7.2	7.1	7.1	7.0	6.9
Flight Plans Filed	5.8	5.6	5.6	5.7	5.8	5.9	6.0	6.1
Aircraft Contacts	3.0	3.0	2.9	2.8	2.7	2.5	2.4	2.3
DUATS Services	<u>16.5</u>	<u>16.4</u>	<u>17.1</u>	<u>18.5</u>	<u>19.9</u>	<u>21.5</u>	<u>23.1</u>	<u>24.9</u>

\* Includes combined activity at FAA and contract towers.

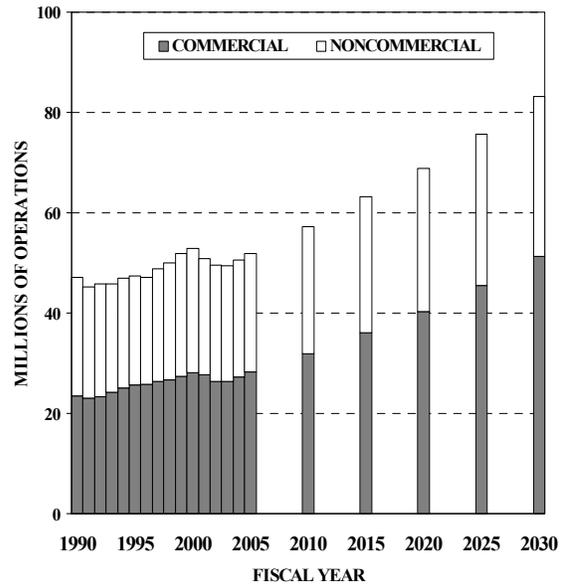
Note: Totals may not add due to independent rounding.

# FAA WORKLOAD FORECASTS

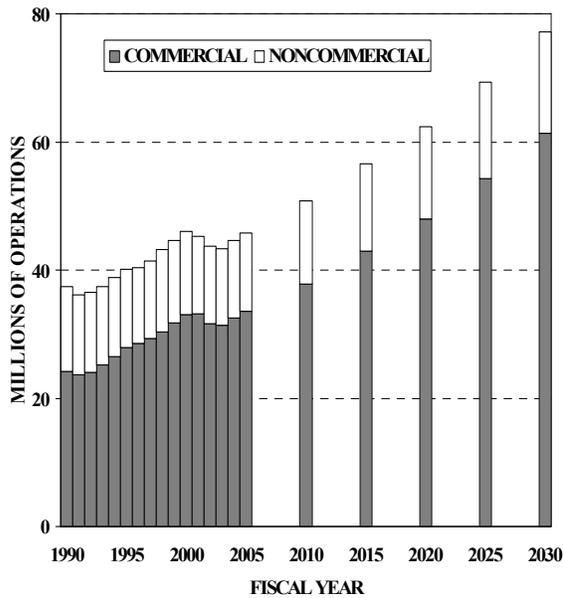
## TOWERED OPERATIONS



## INSTRUMENT OPERATIONS



## IFR AIRCRAFT HANDLED



## FLIGHT SERVICES

