

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

**JULY 2005**

# **FAA LONG-RANGE AEROSPACE FORECASTS FISCAL YEARS 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-05-1, FAA Aerospace Forecasts: Fiscal Years 2005-2016, March 2005) provides projections of aviation activity and FAA workload measures through the year 2016. 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, mainline carrier and regional/commuter passenger enplanements (domestic and international), and mainline carrier air cargo revenue ton-miles (RTMs).

The economic assumptions used in developing these extended forecasts (FY2017-2030) are as follows:

- The U.S. economy will grow at a lower rate than the intermediate 12-year period--2.9 percent versus 3.2 percent annually;
- Inflation will be slightly higher than in the intermediate forecast period--averaging 2.7 percent annually compared to 2.5 percent; and
- Falling real fuel prices--a decrease of 0.2 percent annually compared to a decrease of 1.0 percent annually during the 2004-2016 period;

These assumptions translate into generally lower growth in aviation activity and FAA workload measures during the extended 14-year period (2017 to 2030) than was forecast for the intermediate 12-year period (2004 to 2016). Table 1 shows comparative annual growth rates for 2 time periods: (1) 2004 to 2016; and (2) 2017 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 2017 to 2030 period. Much of the discussion assumes some familiarity with the forecasts contained in FAA Aerospace Forecasts: Fiscal Years 2005-2016 (March 2005). Copies of this report can be obtained from the FAA Statistics and Forecast Branch, APO-110, by calling (202) 267-3355. The entire forecast publication can be found on the Internet at [http://www.faa.gov/data\\_statistics/aviation/aerospace\\_forecasts](http://www.faa.gov/data_statistics/aviation/aerospace_forecasts).

The above referenced document also addresses the forecast assumptions relating to the continuing impact of the events of September 11, 2001, on projected levels of aviation demand. The following long-range forecasts are extensions of the intermediate 10-year forecasts (2006 to 2016). 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 4 years compared to forecasts made prior to September 11, 2001.

### **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 and inflation were used for the period 2004-2016 and Global Insight's U.S. economic projections were used for the period 2017 to 2030. The Global Insight economic projections for international economic growth extend through the year 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 but the rapid run-up in oil prices in 2004/05 reflects a major change in the supply/demand relationship for oil; (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. In addition the forecast assumes that 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.

The long-range economic outlook from Global Insight is somewhat different from Global Insight's long-range outlook that was used to develop last year's projections. While the forecasting service is fairly consistent in its expectations for economic growth, the projections for oil prices are significantly higher than the 2004 projections although the projections for inflation are significantly lower. The major economic assumptions are addressed in more detail below.

**TABLE 1**

**COMPARISON OF**

**INTERMEDIATE AND LONG-RANGE FORECASTS**

|                                     | <u>Average Annual Percent Change</u> |                    |
|-------------------------------------|--------------------------------------|--------------------|
|                                     | <u>2004 - 2016</u>                   | <u>2017 - 2030</u> |
| <b><u>AVIATION ACTIVITY</u></b>     |                                      |                    |
| Passenger Enplanements              |                                      |                    |
| U.S. Domestic                       |                                      |                    |
| Mainline Air Carriers               | 2.8                                  | 3.0                |
| Regionals/Commuters                 | 5.5                                  | 3.4                |
| International*                      | 5.1                                  | 3.8                |
| Air Cargo RTMs                      |                                      |                    |
| Domestic                            | 3.3                                  | 3.0                |
| International                       | 6.3                                  | 5.9                |
| Aircraft Fleets                     |                                      |                    |
| Mainline Air Carrier                | 3.3                                  | 2.9                |
| Regional/Commuter                   | 2.9                                  | 2.0                |
| Cargo Jets                          | 2.5                                  | 2.4                |
| General Aviation                    | 1.1                                  | 0.9                |
| Hours Flown                         |                                      |                    |
| Mainline Air Carrier**              | 3.5                                  | 2.9                |
| Regional/Commuter (Block Hrs)       | 3.6                                  | 2.5                |
| General Aviation                    | 1.6                                  | 1.9                |
| Pilots                              |                                      |                    |
| Total                               | 1.6                                  | 1.4                |
| Instrument Rated                    | 1.6                                  | 1.4                |
| <b><u>FAA WORKLOAD MEASURES</u></b> |                                      |                    |
| Tower Operations***                 | 1.9                                  | 1.8                |
| Instrument Operations***            | 2.1                                  | 2.2                |
| IFR Aircraft Handled                | 2.2                                  | 2.3                |
| Flight Service Stations             | 0.7                                  | 0.9                |

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

\*\* Includes both passenger and cargo operations.

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

## **Real Gross Domestic Product**

The U.S. economy is expected to grow at a moderate rate of 3.1 percent annually during the 26-year forecast period. Growth in real gross domestic product (GDP), adjusted for price changes and expressed in 2000 dollars, is projected to average 2.9 percent annually over the extended 14-year (2017 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 intermediate 12-year forecast period (3.2 percent between 2004 and 2016).

International economic growth is expected to grow at rates comparable to those of the U.S. during the 26-year forecast period. World real GDP is projected to average 3.3 percent annually for the intermediate 12-year forecast period and 3.0 percent annually over the extended 14-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 26-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 2.6 percent a year during the 26-year time period--2.5 percent during the intermediate period, increasing to 2.7 percent over the extended forecast period.

## **Fuel Prices**

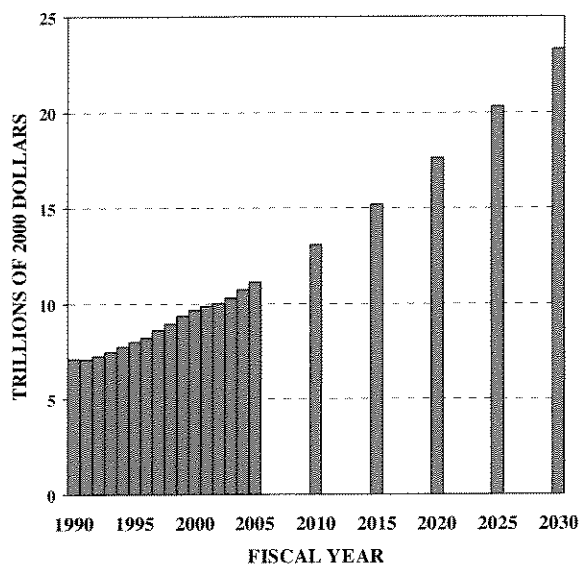
Fuel prices, as measured by the Oil and Gas Deflator, are forecast to increase at an annual rate of 1.7 percent over the 26-year forecast period—lower than the expected overall inflation rate. Between 2004 and 2016, nominal fuel prices are projected to increase 1.5 percent annually, a 1.0 percent decline annually in real terms. Between 2017 and 2030, nominal fuel prices are forecast to increase 2.5 percent annually, a decrease of 0.2 percent annually in real terms.

## **Interest Rates**

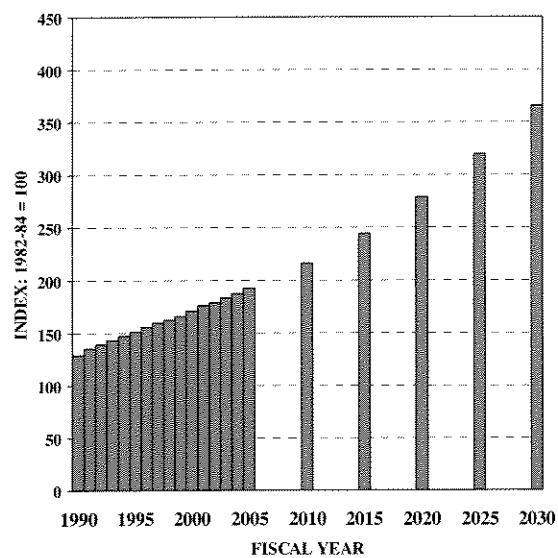
Long-term nominal interest rates are tied to inflationary expectations. The Federal Reserve is expected to pursue a monetary policy that keeps inflation in check and allows for sufficient money growth to sustain economic output gains. Given the long-term outlook for inflation, long-term interest rates are expected to rise gradually during both the intermediate and extended forecast periods. Interest rates are expected to increase from 4.3 percent in 2004 to 5.7 percent in 2016 and remain at that level throughout the balance of the extended forecast period.

# ECONOMIC VARIABLES FORECASTS

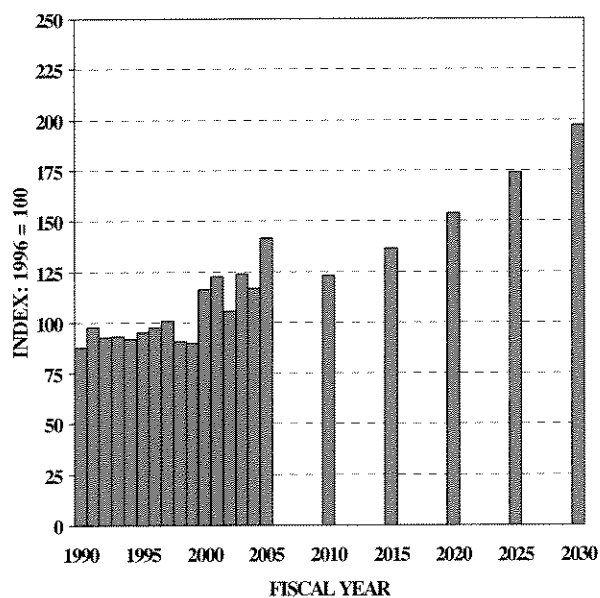
## REAL GDP



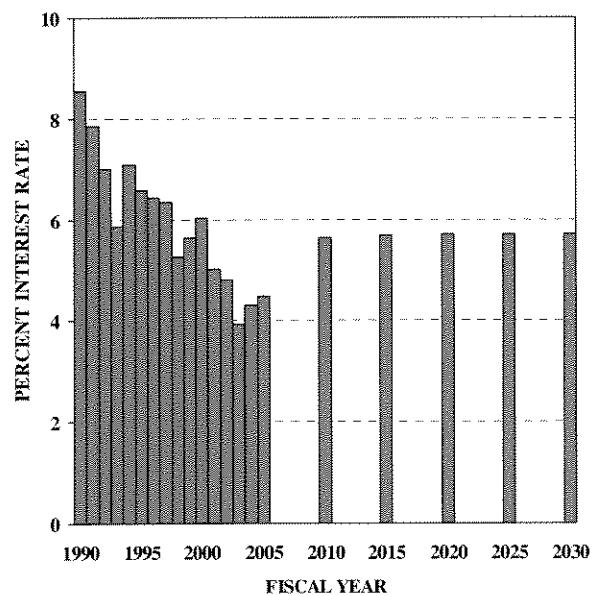
## CONSUMER PRICE INDEX



## 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 2005-2016*. 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 14-year forecasts assume that real domestic passenger yield (expressed as revenue per passenger mile) will continue its historical long-term gradual downward trend. Real domestic passenger yields are projected to decline by 1.4 percent annually over the 26-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 in international markets will continue to expand over the forecast period (although at rates less than in domestic markets), 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 0.7 percent annually through 2016 and decline 0.6 percent annually between 2016 and 2030. Over the 26-year period, international yields, adjusted for inflation, are expected to decline 0.6 percent a year.

### **Average Aircraft Size**

The average number of seats per aircraft for the U.S. domestic mainline carrier fleet is projected to grow modestly throughout the intermediate 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 intermediate 12-year forecast period, the average seats per aircraft for the domestic fleet is expected to grow by 0.4 seats per year--from 149.7 in 2004 to 155.0 in 2016.

The average seating capacity of the domestic mainline carrier fleet is expected to continue to increase over the extended 14-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 fleet is expected to increase by 0.5 seats annually over the extended forecast period, reaching 162.0 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 26-year forecast period as the U.S. carriers expand non-stop city-pair service into deep South America (Argentina, Brazil, Chile), 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 224.1 seats in 2004 to 233.1 seats in 2030.

The average seating capacity of regional/commuter aircraft is forecast to increase by 0.7 seats annually between 2004 and 2016 (from 46.2 to 54.7 seats). This trend is expected to continue over the extended forecast period, with the average seating capacity of regional/commuter aircraft averaging approximately 60.5 seats in the year 2030. This reflects the continued integration of greater numbers of regional jet aircraft (up to 90 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 mainline commercial operators.

### **Load Factor**

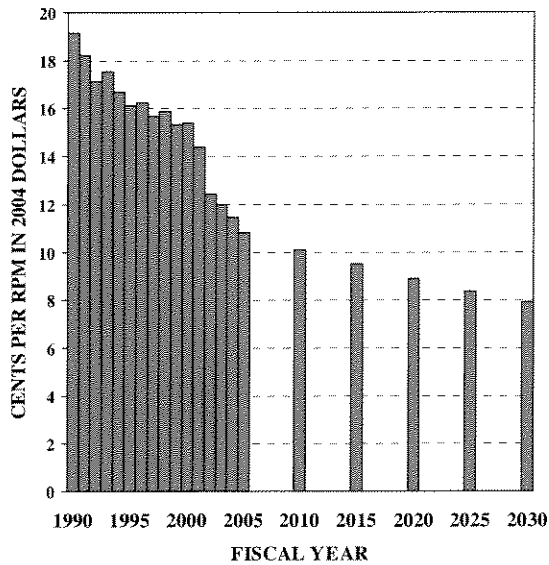
Domestic mainline carrier load factors are projected to remain at their current historical high levels throughout the remainder of the intermediate and extended forecast periods. During the past several years, airline scheduling policies have allowed air carriers to rapidly adjust capacity levels to 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 mainline carrier load factors at between 74 and 77 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 26-year forecast period, decreasing slightly from 79.5 percent in 2003 to 78.4 percent in 2030, reflecting the increasing share of the demand in the relatively low load factor Latin American markets.

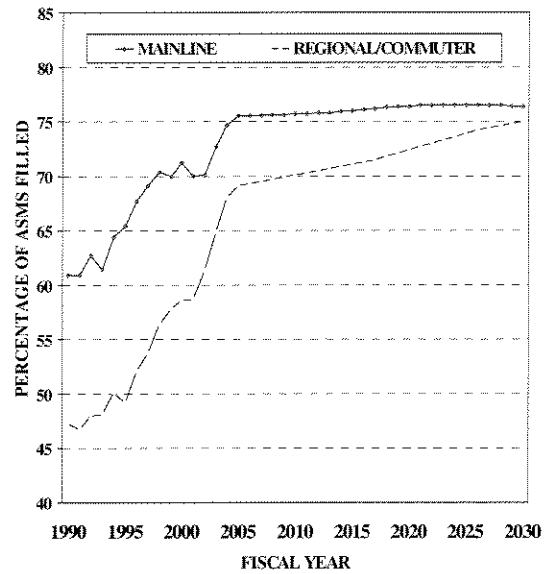
Regional/commuter load factors are projected to increase from 67.9 percent in 2004 to 71.1 percent in 2016. During the extended forecast period, regional/commuter load factors are expected to rise to 75.0 percent by 2030. The higher load factors result from the continued integration of larger regional jet aircraft into new markets and the need to cover the higher cost per seat mile associated with these aircraft.

# OPERATIONAL VARIABLES FORECASTS

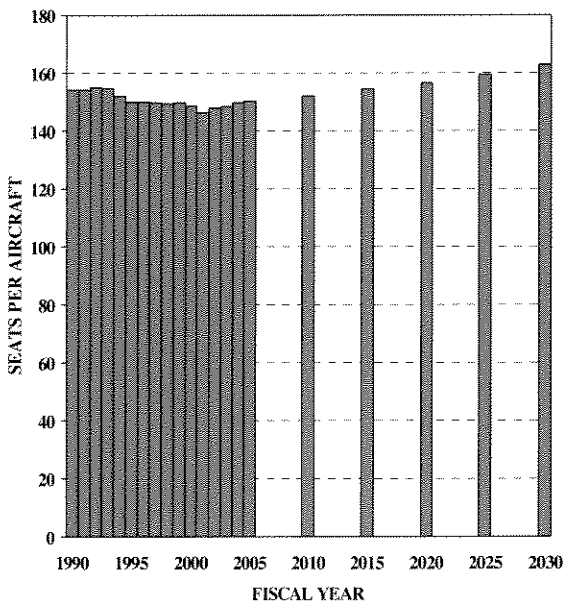
**REAL DOMESTIC MAINLINE  
CARRIER PASSENGER YIELD**



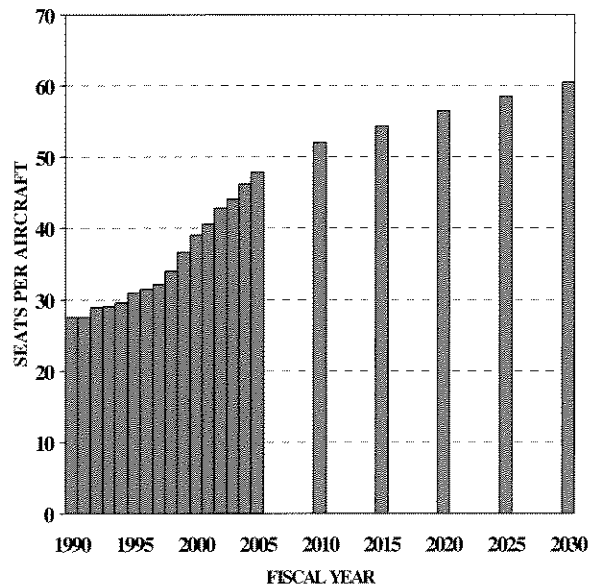
**DOMESTIC PASSENGER  
LOAD FACTOR**



**AVERAGE SEATING CAPACITY  
DOMESTIC MAINLINE CARRIER AIRCRAFT**



**AVERAGE SEATING CAPACITY  
REGIONAL/COMMUTER AIRCRAFT**



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

Forecasts of various measures of aviation activity for 2004 and 5-year increments between 2005 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**

##### **Mainline Carriers**

Mainline carrier demand, as measured by domestic passenger enplanements, is projected to grow at about the same rate as the general economy. For the period 2004 to 2016, domestic passenger enplanements for the mainline carriers are forecast to increase at an average annual rate of 2.8 percent compared to a 3.2 percent annual growth rate in real GDP. Over the extended forecast period (2017-2030), domestic passenger enplanements for the mainline carriers are projected to increase at an average annual rate of 3.0 percent compared to real GDP growth of 2.9 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 134.0 million in 2004 to 378 million in 2030, an average annual growth rate of 4.1 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 4.5 percent annually during the same time period. The Atlantic market is forecast to grow at 3.6 percent annually through 2030, followed by U.S./Canadian transborder traffic at 3.0 percent for the 26-year forecast period.

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

Regional/commuter passengers are projected to continue to grow relatively faster than the mainline air carriers through the intermediate forecast period with average annual growth of 5.5 percent. A large part of the growth during the early years of the intermediate forecast period results from the continued shift of low-density, short-haul markets from the mainline air carriers to their commuter code-share partners, a trend that accelerated in the aftermath of the September 11<sup>th</sup> terrorist attacks. In the longer run, the distinction between mainline carrier and regional/commuter flying will essentially be eliminated and these carriers will be competing for similar passengers. As a result, regional/commuter passenger growth during the extended forecast period will be similar to that of the mainline carriers, averaging 3.4 percent per year. 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. The continued public preference for jet aircraft together with the increasing availability of larger (e.g. 70+ seats) regional jets should ensure that the regional/commuter industry should continue to grow rapidly.

### **Air Cargo**

The air cargo forecast discussed here is comprised of domestic and international revenue freight/express and mail carried by U.S. mainline 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 2004, combined domestic and international RTMs flown by U.S. air carriers totaled 35.1 billion. By 2016 this figure is projected to reach 63.8 billion, an average annual increase of 5.1 percent. During the extended forecast period, total domestic and international cargo RTMs is projected to total 125.9 billion RTMs, an average annual increase of 5.0 percent. Over the entire 26-year period, growth in total air cargo RTMs is expected to average 5.0 percent annually.

Domestic RTMs are forecast to increase from 15.5 billion in 2004 to 34.4 billion in 2030, an average annual increase of 3.1 percent over the 26-year forecast period. International RTMs are forecast to grow at a faster rate than domestic RTMs, increasing from 19.6 billion in 2004 to 91.5 billion in 2030, averaging 6.1 percent growth annually for the 26-year forecast period. This expectation is based on the projected economic growth in world GDP, with the highest rates of growth expected in the Asian (particularly China) and Latin American regions.

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

### **Mainline Air Carriers**

The mainline air carrier passenger jet fleet is forecast to increase at an annual rate of 3.3 percent from 4,046 aircraft in 2004 to 5,999 aircraft in 2016. The size of the fleet grows modestly from the low point in 2004 as carriers add aircraft to accommodate growing demand following the industry downturn that began in early 2001 and was exacerbated by the September 11<sup>th</sup> terror attacks and the subsequent restructuring of the industry. 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 135 aircraft (3.3 percent) annually. By 2016, the two-engine narrowbody aircraft category is expected to total 5,029 units and account for 83.8 percent of the fleet. This trend is also expected to continue throughout the extended forecast period.

Between 2016 and 2030, the mainline carrier fleet is forecast to increase at an average annual rate of 2.9 percent, reaching a total of 8,914 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 7,614 units and account for more than 85 percent of the fleet.

The cargo jet fleet is projected to increase at an annual rate of 2.5 percent during the intermediate 12-year forecast period, from 974 aircraft in 2004 to 1,312 in 2016. During the extended 14-year forecast period, the cargo jet fleet is forecast to increase at a 2.4 percent average annual rate

reaching 1,841 aircraft by 2030. Over the entire 26-year forecast period, the cargo jet fleet is forecast to grow at the same rate as the passenger fleet (2.6 percent), despite the expected higher sustained growth in cargo traffic--especially international traffic.

The regional/commuter fleet is expected to grow from its current 2,812 aircraft in 2004 to 5,232 by the year 2030. This is an average annual growth rate of 2.4 percent over the 26-year forecast period, or an increase of approximately 93 aircraft annually. These totals reflect the continued growth in the regional jet fleet, especially the larger versions (70+ seats), which will be introduced into the fleet in significant numbers over the forecast period.

The number of hours flown by mainline carrier passenger and cargo jet aircraft is forecast to increase by 3.5 percent annually between 2004 and 2016, and by 2.8 percent annually between 2016 and 2030. The intermediate and extended range fleet forecasts imply that U.S. mainline carriers will use larger aircraft and operate at continued high load factors to accommodate increasing passenger demand. Regional/commuter block hours are forecast to increase at an average annual rate of 3.0 percent during the same time period--from 6.7 million hours in 2004 to 14.4 million in 2030.

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

The number of active general aviation aircraft is expected to increase from 211,295 aircraft in 2004 to 240,070 in 2016, and then expand to 271,903 by 2030. This represents an average annual growth of 1.1 percent during the intermediate forecast period and 0.9 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 intermediate and extended forecast periods. Fixed-wing turbine powered general aviation aircraft are expected to increase 3.7 percent annually between 2004 and 2016, and by 3.6 percent during the 2016 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 (including new microjets) 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 real 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 grow 1.6 percent annually during both the intermediate and extended forecast periods increasing from 27.3 million in 2004 to 32.8 million in 2016, and to 41.9 million in 2030.

The positive forecasts for general aviation fleet and flight hours are heavily dependent on the assumptions related to continued economic growth, price stability, as well as a rapid increase in the use of microjets or very light jets (VLJ's). The forecast assumes that the market for on-demand air taxi service will continue to grow rapidly and stimulate high demand for VLJ's. By 2016, the VLJ fleet is projected to total 4,500 aircraft and grows to 14,125 aircraft by 2030. 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 618,633 in 2004 to 909,266 by the year 2030, an average annual growth rate of 1.4 percent over the 26-year forecast period. The largest growth is found in the airline transport, commercial, and private pilot categories. 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 contribute to the growth in the pilot population while the continuing growth in air transport demand fuels the increase in the airline transport category. Increased demand for corporate, fractional, and on-demand air taxi services is expected to stimulate the growth in the commercial pilot population. During this same time period, the number of instrument rated pilots is expected to increase from 313,545 to 460,680. The instrument rated pilot share of the total pilot population remains constant at 50.7 percent in both 2004 and in 2030.

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

Total civil aircraft activity at towered airports (266 FAA and 223 contract in 2004) 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 158.8 million by the year 2030, an average annual growth of 1.1 percent over the activity level forecast for 2016 (136.3 million operations). This in turn is an average annual growth rate of 1.0 percent over the 120.4 million total aircraft operations estimated in 2004.

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 29.0 million in 2004 to 36.3 million in 2015, and to 49.7 million in 2030. These forecasts imply an average annual growth rate of 2.1 percent for both the intermediate and extended forecast period, respectively.

The number of general aviation operations at towered and non-towered airports is forecast to increase from 85.7 million in 2004 to 92.9 million in 2015 and to 103.4 million in 2030. These forecasts imply an average annual growth rate of 0.7 percent over both the intermediate and extended forecast periods. 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**

|                                       | Actual | March 2005 Forecast |       |       | Long Range Forecast |       |         |
|---------------------------------------|--------|---------------------|-------|-------|---------------------|-------|---------|
|                                       | 2004   | 2005                | 2010  | 2015  | 2020                | 2025  | 2030    |
| <b>Enplanements and</b>               |        |                     |       |       |                     |       |         |
| <b><u>Air Cargo (In Millions)</u></b> |        |                     |       |       |                     |       |         |
| Enplanements                          |        |                     |       |       |                     |       |         |
| Mainline Air Carriers                 |        |                     |       |       |                     |       |         |
| Domestic*                             | 502.2  | 505.7               | 588.0 | 679.0 | 787.1               | 912.5 | 1,059.9 |
| International**                       | 134.0  | 145.4               | 185.6 | 224.5 | 268.8               | 319.5 | 378.0   |
| Regional/Commuter                     | 128.9  | 148.9               | 196.1 | 236.7 | 283.6               | 335.8 | 394.1   |
| Freight/Express RTMs                  | 35.1   | 37.0                | 47.5  | 60.8  | 77.5                | 98.6  | 125.9   |
| <br><b><u>Aircraft Fleets</u></b>     |        |                     |       |       |                     |       |         |
| (in Thousands)                        |        |                     |       |       |                     |       |         |
| Mainline Carrier-                     |        |                     |       |       |                     |       |         |
| Large Jets***                         | 4.0    | 4.1                 | 5.0   | 5.8   | 6.7                 | 7.7   | 8.9     |
| Cargo-Jet Aircraft                    | 1.0    | 1.0                 | 1.1   | 1.3   | 1.4                 | 1.6   | 1.8     |
| Regional/Commuter                     | 2.8    | 3.0                 | 3.6   | 3.9   | 4.3                 | 4.8   | 5.2     |
| Regional Jets                         | 1.6    | 1.9                 | 2.5   | 2.9   | 3.3                 | 3.8   | 4.3     |
| Turboprops                            | 1.2    | 1.2                 | 1.0   | 1.0   | 1.0                 | 1.0   | 0.9     |
| General Aviation                      |        |                     |       |       |                     |       |         |
| Piston Engine                         | 161.7  | 161.8               | 163.8 | 165.1 | 166.3               | 167.6 | 169.0   |
| Turbine Engine                        | 15.7   | 16.2                | 19.8  | 23.7  | 27.8                | 33.2  | 39.9    |
| Helicopters                           | 6.9    | 7.0                 | 7.4   | 7.8   | 8.3                 | 8.7   | 9.2     |
| Experimental/Other                    | 26.9   | 29.9                | 39.4  | 42.2  | 45.2                | 49.1  | 53.9    |
| <br><b><u>Hours Flown</u></b>         |        |                     |       |       |                     |       |         |
| (In Millions)                         |        |                     |       |       |                     |       |         |
| Air Carrier                           | 13.7   | 14.3                | 17.1  | 20.2  | 23.0                | 26.4  | 30.6    |
| Regional/Commuter****                 | 6.7    | 7.2                 | 8.7   | 10.0  | 11.4                | 12.9  | 14.4    |
| General Aviation                      | 27.3   | 27.9                | 30.1  | 32.4  | 34.9                | 38.3  | 42.5    |
| <br><b><u>Active Pilots</u></b>       |        |                     |       |       |                     |       |         |
| (In Thousands)                        |        |                     |       |       |                     |       |         |
| Total                                 | 618.6  | 635.0               | 690.7 | 740.6 | 792.5               | 848.7 | 909.3   |
| Instrument Rated                      | 313.5  | 318.5               | 347.0 | 374.0 | 400.9               | 429.7 | 460.7   |
| <br><b><u>Estimated U. S.</u></b>     |        |                     |       |       |                     |       |         |
| <b><u>Civil Operations</u></b>        |        |                     |       |       |                     |       |         |
| (In Millions)                         |        |                     |       |       |                     |       |         |
| Commercial                            | 28.1   | 29.7                | 32.9  | 36.3  | 40.2                | 44.6  | 49.7    |
| General Aviation                      | 85.7   | 86.4                | 89.6  | 92.9  | 96.5                | 99.9  | 103.4   |

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

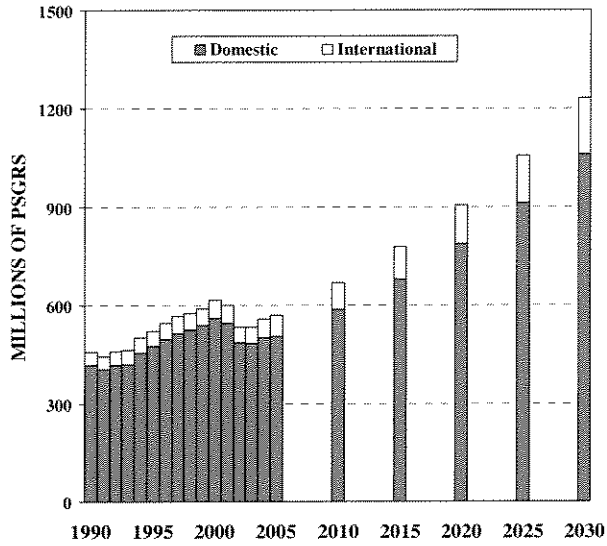
\*\* Total international passengers to and from the United States—U.S. and Foreign Flag carriers

\*\*\* Including EMB-190's

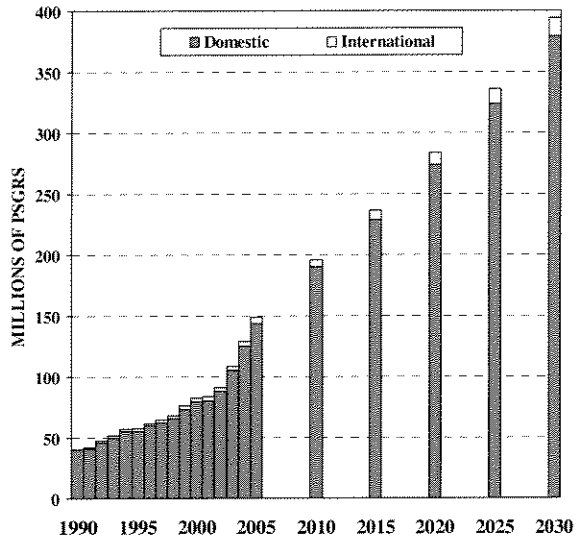
\*\*\*\* Block Hours

# AVIATION ACTIVITY FORECASTS

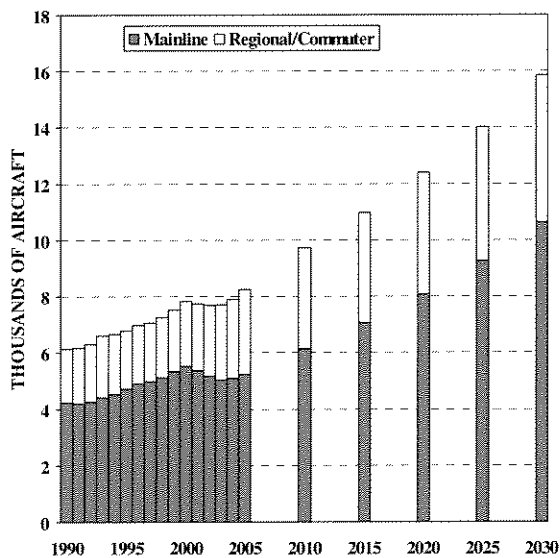
## MAINLINE CARRIER ENPLANEMENTS



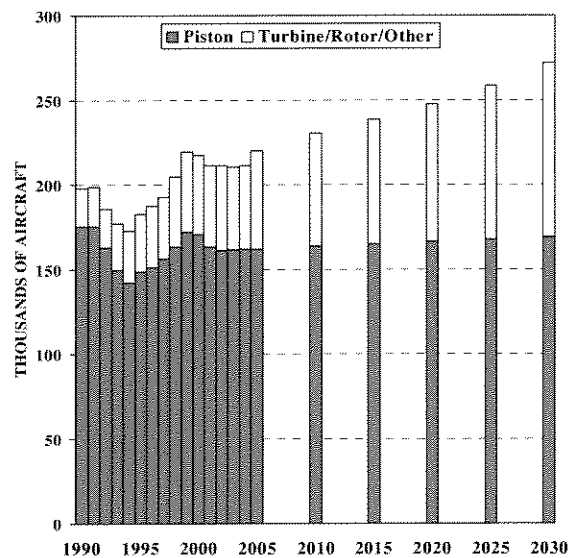
## REGIONAL/COMMUTER PASSENGER ENPLANEMENTS



## COMMERCIAL AIRCRAFT FLEET



## GENERAL AVIATION FLEET



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

Forecasts of FAA workload measures by user groups for 2004 and 5-year increments between 2005 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 2004 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 34 to 223. An additional 11 contract towers are expected to be added in 2005, bringing the total number of contract towers to 234. 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 78.9 million in 2016 and 101.4 million in 2030—an average annual growth rate of 1.8 percent over the 26-year forecast period. Most of the growth is expected to come from commercial activity, which is projected to grow 2.8 percent annually during the intermediate forecast period and 2.4 percent annually during the extended forecast period. The slower growth in commercial activity relative to enplanements (3.6 and 3.2 percent during the intermediate 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 mainline carriers over the 26-year forecast period (4.4 percent compared to 3.1 percent), commuter/air taxi operations increase only slightly faster than air carrier operations (2.7 percent compared to 2.5 percent). The commuter/air taxi activity growth is largely due to the large numbers of 70-90 seat 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 mainline carriers.

General aviation activity, which accounted for 55.4 percent of combined tower activity in 2004, grows at a considerably slower pace relative to commercial activity over the 26-year forecast period—1.3 percent. In the year 2030, general aviation is expected to account for 48.8 percent of combined tower activity. Military activity is projected to grow to 3.0 million operations by 2005 and remain at that level through the balance of the intermediate and the extended forecast periods.

## **B. Instrument Operations**

Instrument operations at combined FAA and contract-towered airports are forecast to total 63.4 million in 2016 and 85.8 million in 2030, an average annual growth rate of 2.1 and 2.2 percent respectively, during the intermediate and extended forecast periods. Most of the growth is expected to come from commercial activity, which is projected to grow 2.7 percent annually during the intermediate and 2.4 percent annually during the extended forecast period. Mainline carrier instrument activity is forecast to grow 2.3 percent annually during the intermediate forecast period and 2.6 percent during the extended forecast period. Commuter/air taxi activity is forecast to increase at a 3.1 percent annual rate during the intermediate forecast period and 2.1 percent annually over the extended forecast period.

General aviation activity is projected to increase at a slower pace, averaging 1.5 percent through the intermediate forecast period and 2.1 percent during the extended forecast period. Military activity is forecast to remain constant at the 3.2 million operations recorded in 2004.

Commercial activity is expected to increase from 55.7 percent of total instrument activity at combined FAA and contract towers in 2004 to 61.7 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 60.2 million in 2016 and 82.6 million in 2030, an average growth rate of 2.2 and 2.3 percent for the intermediate and extended forecast periods, respectively. Most of the growth occurs in the number of commercial aircraft handled, which increases by 2.6 percent annually during the intermediate forecast period and 2.5 percent annually during the extended time period. The number of mainline carrier aircraft handled increases by an average annual rate of 2.3 percent in the intermediate time period and then increases to 2.6 percent in the extended time period. The number of commuter/air taxi aircraft handled is forecast to increase by 3.1 percent annually during the intermediate forecast period and 2.1 percent over the extended forecast period—averaging 2.6 percent over the entire 26-year period.

The number of general aviation aircraft handled at FAA en route centers increases at a slower rate over the two forecast periods, 1.7 and 2.1 percent annually during the respective forecast periods. The number of military aircraft handled is forecast to remain constant at the 4.0 million recorded in 2004 through 2030.

By the end of the 26-year forecast period, commercial activity is expected to account for 78.7 percent of the total center activity, up from 73.2 percent in 2004.

#### **D. Flight Services**

The number of services provided by FAA flight service stations is forecast to increase from a total of 27.1 million in 2004 to 29.3 million in 2016 and 34.3 million in 2030, an annual increase of 0.8 percent in the intermediate and 0.9 percent in the extended time periods. The average annual growth rates for each of the three flight service categories for the intermediate and extended forecast periods are: flight plans originated: up 0.3 and 0.7 percent; pilot briefs up 1.2 and 1.0 percent; and number of aircraft contacted; up 0.9 percent for both of the 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 at a 3.1 percent annual rate in the intermediate forecast period and total 28.4 million in 2016. The growth in DUATS services is then projected to slow to 1.5 percent annually during the extended forecast period resulting in a DUATS service total of 34.7 million in 2030. During the 26-year period, the combined FSS and DUATS services are forecast to increase at an average annual rate of 2.2 percent.

On February 1, 2005, the FAA announced that Lockheed Martin had been selected to provide the services currently offered by the automated flight service stations. Lockheed Martin is scheduled to begin to assume operations of the automated flight service stations in October 2005. Incremental consolidation of the flight service stations is expected to begin in April 2006 and is expected to result in 20 sites by March 2007. These forecasts of FSS and DUATS services assume that the consolidation process will not impact the level of flight service activity. There is, however, significant uncertainty concerning the impact of technology on the set of flight services to be provided 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)

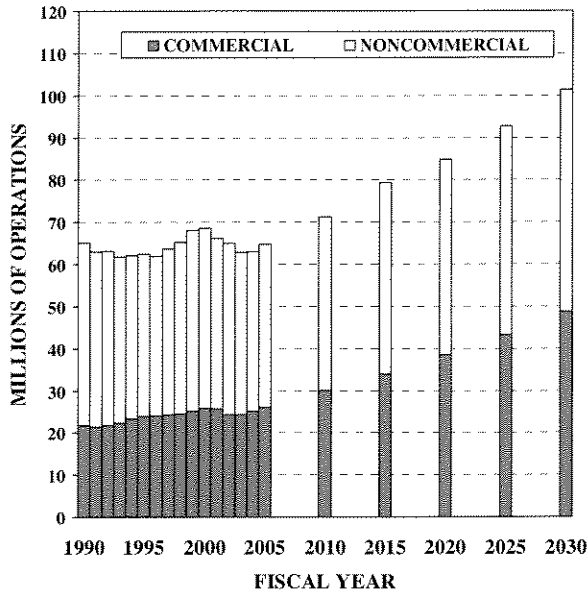
|                                       | Actual      | <u>March 2005 Forecast</u> |             |             | <u>Long Range Forecast</u> |             |              |
|---------------------------------------|-------------|----------------------------|-------------|-------------|----------------------------|-------------|--------------|
|                                       | <u>2004</u> | <u>2005</u>                | <u>2010</u> | <u>2015</u> | <u>2020</u>                | <u>2025</u> | <u>2030</u>  |
| <b><u>Tower Operations*</u></b>       |             |                            |             |             |                            |             |              |
| Total                                 | <u>63.1</u> | <u>64.5</u>                | <u>71.2</u> | <u>77.6</u> | <u>84.7</u>                | <u>92.6</u> | <u>101.3</u> |
| Itinerant                             | <u>46.0</u> | <u>47.5</u>                | <u>49.5</u> | <u>54.4</u> | <u>65.1</u>                | <u>71.7</u> | <u>79.0</u>  |
| Air Carrier                           | 12.9        | 12.9                       | 14.7        | 16.6        | 18.9                       | 21.5        | 24.6         |
| Commuter/Air Taxi                     | 12.2        | 13.1                       | 15.4        | 17.4        | 19.6                       | 21.8        | 24.3         |
| General Aviation                      | 20.0        | 20.3                       | 22.0        | 23.5        | 25.1                       | 26.8        | 28.7         |
| Military                              | 1.5         | 1.5                        | 1.5         | 1.5         | 1.5                        | 1.5         | 1.5          |
| Local                                 | <u>16.4</u> | <u>16.7</u>                | <u>17.6</u> | <u>18.5</u> | <u>19.7</u>                | <u>20.9</u> | <u>22.3</u>  |
| General Aviation                      | 14.9        | 15.2                       | 16.1        | 17.0        | 18.2                       | 19.4        | 20.8         |
| Military                              | 1.5         | 1.5                        | 1.5         | 1.5         | 1.5                        | 1.5         | 1.5          |
| <b><u>Instrument Operations *</u></b> |             |                            |             |             |                            |             |              |
| Total                                 | <u>49.1</u> | <u>50.1</u>                | <u>55.6</u> | <u>62.0</u> | <u>69.1</u>                | <u>77.0</u> | <u>85.8</u>  |
| Air Carrier                           | 14.2        | 14.1                       | 16.2        | 18.2        | 20.7                       | 23.6        | 26.9         |
| Commuter/Air Taxi                     | 13.2        | 14.1                       | 16.5        | 18.7        | 21.0                       | 23.4        | 26.0         |
| General Aviation                      | 18.6        | 18.7                       | 19.8        | 21.9        | 24.2                       | 26.8        | 29.7         |
| Military                              | 3.2         | 3.2                        | 3.2         | 3.2         | 3.2                        | 3.2         | 3.2          |
| <b><u>ARTCC Aircraft Handled</u></b>  |             |                            |             |             |                            |             |              |
| Total                                 | <u>46.2</u> | <u>46.9</u>                | <u>52.8</u> | <u>58.9</u> | <u>65.9</u>                | <u>73.7</u> | <u>82.6</u>  |
| Air Carrier                           | 23.9        | 23.8                       | 27.2        | 30.7        | 34.9                       | 39.7        | 45.3         |
| Commuter/Air Taxi                     | 10.0        | 10.6                       | 12.5        | 14.1        | 15.9                       | 17.7        | 19.7         |
| General Aviation                      | 8.4         | 8.5                        | 9.1         | 10.0        | 11.1                       | 12.3        | 13.6         |
| Military                              | 4.0         | 4.0                        | 4.0         | 4.0         | 4.0                        | 4.0         | 4.0          |
| <b><u>FSS Flight Services</u></b>     |             |                            |             |             |                            |             |              |
| Total                                 | <u>27.1</u> | <u>26.6</u>                | <u>27.6</u> | <u>29.0</u> | <u>30.4</u>                | <u>31.8</u> | <u>33.1</u>  |
| Pilot Briefs                          | 6.8         | 6.7                        | 7.1         | 7.5         | 7.9                        | 8.2         | 8.6          |
| Flight Plans Filed                    | 5.4         | 5.3                        | 5.3         | 5.5         | 5.6                        | 6.0         | 6.2          |
| Aircraft Contacts                     | 2.7         | 2.6                        | 2.7         | 3.0         | 3.2                        | 3.4         | 3.5          |
| DUATS Services                        | <u>19.8</u> | <u>21.1</u>                | <u>25.1</u> | <u>27.9</u> | <u>30.3</u>                | <u>32.6</u> | <u>34.7</u>  |

\* Includes combined activity at FAA and contract towers.

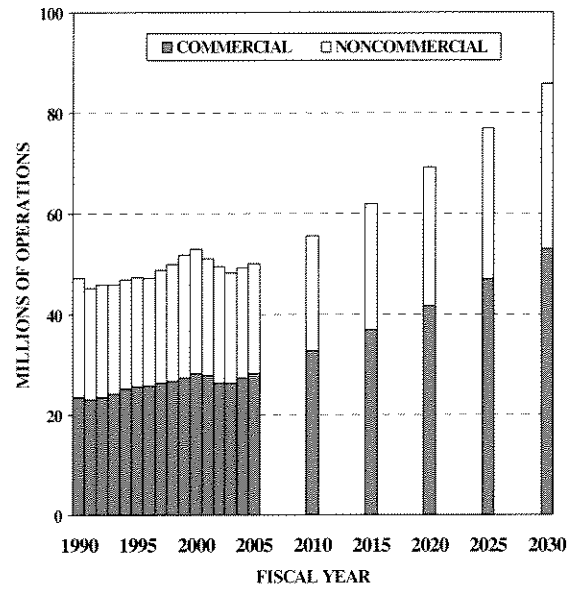
Note: Totals may not add due to independent rounding.

# FAA WORKLOAD FORECASTS

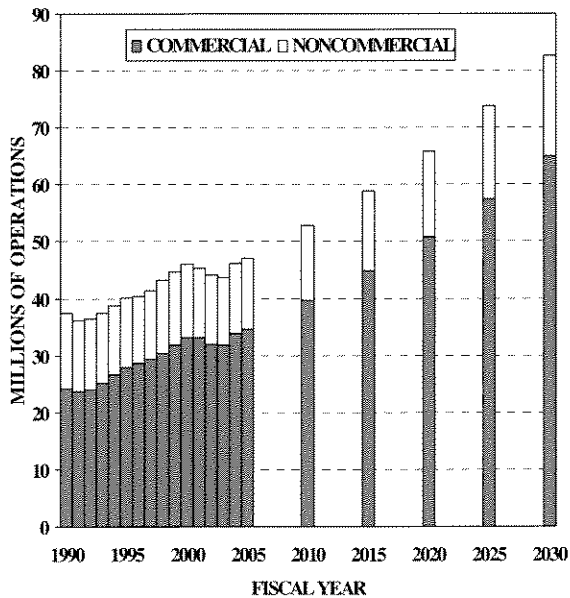
## TOWERED OPERATIONS



## INSTRUMENT OPERATIONS



## IFR AIRCRAFT HANDLED



## FLIGHT SERVICES

