

APPENDIX A: ADJUSTMENT METHODOLOGY TO UPDATE ECONOMIC VALUES

A.1 INTRODUCTION

The values developed in this report are expected to change with the passage of time because of price and income level movements, aviation industry changes, advances in theoretical and empirical research, and policy changes. This report will be revised periodically to account for such changes and advancements. Between revisions, interim updates for passenger related values will be provided by the Office of Aviation Policy and Plans based upon guidance furnished by the Office of the Secretary of Transportation. For aircraft related values, users may adjust the 1996 base year aircraft related values to future year values utilizing the recommendations outlined in this appendix.

A.2 AIRCRAFT CAPACITY AND UTILIZATION FACTORS

These values, developed in Section 3, are based on the physical makeup and operation of the fleet. No economic index approach can be used to easily update these values, as there is no known correlation between the sundry values and general economic indexes.

We note that if revisions or projections of these values are required, the annual *FAA Aviation Forecasts* series provides many of the aggregate air carrier and general aviation values for capacity and utilization. The following are available for scheduled commercial air carriers (both Form 41 and Form 298C) directly from the annual Forecast:

- Passenger load factor (RPMs/ASMs)
- Passenger capacity
- Total flight hours
- Daily utilization (airborne hours/(aircraft x 365))

Flight hours are also available for GA and air taxi operations from this same source.

The analyst can also use the primary data sources to update capacity and utilization factors. Form 41 and Form 298C data are available from the Bureau of Transportation Statistics of the U.S. DOT and are also made available by various commercial services including Data Base Products (Dallas, TX) and Backe Associates (Stamford, CT). The best source of data for the GA and military fleets is the FAA's annual *General Aviation and Air Taxi Activity and Avionics Survey*.

A.3 AIRCRAFT OPERATING COSTS

Aircraft operating costs, developed in Section 4, should be updated either by reference to the cited sources or by use of price indexes. Use of source data can be expected to be the most accurate approach, particularly when updating values for specific aircraft models. The price index approach has the advantage of being much less time and resource intensive.

The original data sources as cited in the text are:

- For commercial operations: Form 41 and Form 298C data from the sources cited above
- For GA and air taxi operations, *The Aircraft Cost Evaluator* published by Conklin and deDecker (Orleans, MA)
- For military operations, the various web sites indicated in the text.

The alternative approach is to adjust the 1996 data presented in the text for price and cost changes. This should be done separately for fuel costs and all other operating cost components.

For commercial operators, the *FAA Aviation Forecasts* has sufficient data to develop general updates to operating costs. The main body of the Forecast book documents annual changes in operating costs (except fuel) expressed in cents per available seat mile. These values can be used as an index of operating costs (excluding fuel) for the industry using the methodology described below.

Since fuel is such an important and variable part of commercial costs, these should be adjusted to future year dollar values by use of published fuel price indexes. The annual *FAA Aviation Forecasts* provides fuel indexes, including projections of these indexes into the future.

Data to update general aviation and military costs are much more sparse. The fuel indexes from *FAA Aviation Forecasts* should be used to update the fuel cost component of general aviation operating cost. In the absence of better data, it is recommended that other GA operating costs and all military costs be updated using the *Price Index for Gross Domestic Product Personal Consumption Expenditures*.¹

¹ *Business Statistics of the United States* (Annual: Berman Press; Lanham, MD) or for the latest update on the Worldwide Web, go to <http://www.bea.doc.gov> and select *GDP and Related Data*.

Regardless of the source of update information, the following equation may be used:

$$(P_f/P_b) \times C_b = \text{Adjusted Aircraft Operating Cost}$$

where:

P_f and P_b are the prices in the future year and base year, and
 C_b is the cost per block or airborne hour of operation in the base year.

It is recommended that updated operating costs per hour be rounded to the nearest dollar.

A.4 UNIT REPLACEMENT AND RESTORATION COSTS OF DAMAGED AIRCRAFT

Unit replacement and restoration costs of damaged aircraft, developed in Section 5, should be updated by either specific reference to cited sources, or by applying a price index. As with aircraft operating costs, use of source data can be expected to be the most accurate approach, particularly with respect to specific aircraft models. The price index approach is much less time and resource intensive.

For commercial aircraft, there are a number of vendors that provide estimates of aircraft values, including:

GRA Aviation Specialists (Reston, VA)
Avitas (Reston, VA)
Avmark (Arlington, VA)

For general aviation and air taxi aircraft, the best source of updated price data is *Aircraft Bluebook – Price Digest* (Overland Park, KS: Intertec Publishing). Updates on military values can be found in *Aviation and Aerospace Almanac* (Washington, DC: Aviation Week Group Newsletters).

In the absence of a more specific index, it is suggested that the *Producer Price Index for Civilian Aircraft*² be used to adjust aircraft replacement and restoration costs to future year dollars. The adjustment method is illustrated below:

$$(PPI-CA_f/PPI-CA_b) \times (REP_b) = \text{Adjusted Unit Replacement Cost of a Damaged Aircraft}$$

where:

PPI-CA_f and PPI-CA_b are the Producer Price Index for Civilian Aircraft for the future year and base year, and
REP_b is the unit replacement cost of a destroyed aircraft in the base year.

With regard to restoration costs, it is recommended that the restoration percentages of aircraft values shown in Table 5-4 be applied to updated aircraft values developed using the methods described immediately above.

It is recommended that adjusted aircraft replacement and restoration costs be rounded to the nearest \$1,000 for values less than \$1,000,000 and to the nearest \$10,000 for values greater than \$1,000,000.

² *Business Statistics of the United States* (Annual: Berman Press; Lanham, MD) or for the latest update on the Worldwide Web, go to <http://stats.bls.gov>, and select *Producer Price Index—Commodities*.