The FAA is confident that the final rule will further reduce air carrier accidents. The final rule will require dozens of changes to the way that smaller air carrier airplanes are built, maintained, and operated—all aimed at eliminating or at the very least minimizing the differences between small and large airplanes and the way they operate. Many of these changes result in small, unmeasurable safety improvements when examined in isolation, but taken together result in a measurable difference. That measurable difference ultimately is to bring commuter accident rates down to the very low level of that of the larger carriers. That rate is nearing the point of rare, random events.

What follows is a quantified analysis of the potential benefits of the final rule based on the assumption that it will reduce the number of commuter airplane accidents and (possibly mitigate the severity of those casualties in accidents that will occur). The analysis finds that measurable potential benefits substantially exceed the cost of the final rule, but the FAA believes that the larger but unquantifiable benefit is continued public confidence in air transportation.

Safety Benefits From Preventing Accidents. The intent of the Commuter Rule is to close, to the extent practicable, the accident rate gap between airplanes with 10 to 30 seats currently operating under part 135 and airplanes with 31 to 60 seats operating under part 121. The smaller "commutertype" part 121 airplanes were used for comparison because their operations best resemble those of commuters than do larger part 121 airplanes. If the accident rate gap were completely closed, the FAA estimates that up to 67 accidents involving airplanes with 10 to 30 seats could be prevented from 1996 to 2010. This would generate a benefit of \$588 million, with a present value of \$350 million.

Typically, the FAA estimates aviation safety benefits based on rates of specific types of accidents that the rulemaking would prevent in the future. For this rulemaking, however, the FAA used a more broad-based accident rate. This approach was adopted because the scope of the various components of the rule covers such a wide range, and many of those components are interrelated.

To estimate the benefits of the rule, the FAA assembled a database of applicable part 121 and part 135 accidents between 1985 and 1994 using National Transportation Safety Board (NTSB) accident reports. These accidents were categorized by the

passenger seating configuration of the airplanes involved-10 to 19, 20 to 30, and 31 to 60. The FAA then divided the annual number of accidents by the annual number of scheduled departures for each group to derive the annual accident rates. After calculating the 10year historical average accident rates, the FAA took the difference in the accident rates between the part 135 airplanes and the part 121 airplanes. The difference in rates was then multiplied by the projected annual number of scheduled part 135 departures of airplanes with 10 to 19 seats and 20 to 30 seats from 1996 to 2010. Each step of this estimation procedure is described in detail below.

The Accident Database. The NTSB defines an accident as an occurrence associated with the operation of an airplane which takes place between the time any person boards the airplane with the intention of flight and the time such that persons have disembarked, and in which any person suffers death or serious injury or in which the airplane receives substantial damage. The FAA looked at only those accidents for which the final rule could have an effect. Accidents in which the probable cause was undetermined, the result of turbulence, or was related to the ground crew were not included in the database. The FAA also excluded midair collisions, since the current airspace rules (Mode C, TCAS, positivelycontrolled-airspace areas, etc.) would not be affected by the final rule. Finally, the FAA excluded accidents involving unscheduled and all-cargo operations.

Annual Accident Rate. Based on the annual number of accidents from the database and the annual number of departures, the FAA estimated the accident rates for 10-to-30-seat airplanes operating under part 135 and 31-to-60seat airplanes operating under part 121. From 1986 to 1994, the FAA found that part 135 airplanes with 10 to 19 seats were involved in accidents at a rate of .32 accidents per 100,000 departures and airplanes with 20 to 30 seats occurred at an average rate of .17 accidents per 100,000. Accidents involving part 121 airplanes with 31 to 60 seats had an average accident rate of .13 accidents per 100,000 departures.

The Average Cost of a Part 135 Accident. From the accident database discussed above, the FAA found that the average part 135 accident involving 10to-19- and 20-to-30-seat airplanes cost \$6.3 million and \$24.6 million, respectively.

*Estimating Potential Benefits.* To estimate the benefit of closing the accident-rate gap between part 135 and part 121 airplanes, the FAA took the difference in average accident rates for 10-to-30-seat part 135 airplanes and 31to-60-seat part 121 airplanes and multiplied them by the projected annual number of departures for 10-to-30-seat part 135 airplanes. This gives the projected annual number of accidents that the final rule could prevent. The FAA estimates that, from 1996 to 2010, 67 accidents could be prevented. Multiplying the number of potential accidents by the average cost of a part 135 accident (\$6.3 million for 10-to-19seat airplanes or \$24.6 million for 20-to-30-seat airplanes) results in total potential benefits of \$588.2 million (\$350 million, present value).

The extent to which the accident rate gap closes will determine how much of the \$350 million in potential benefits is actually achieved. Based on the scope of the final rule, the FAA anticipates a significant closing of this gap.

## D. Comparison of Costs and Benefits

Over the next 15 years, the Commuter Rule will impose total costs of \$117.80 million, with a present value of \$75.19 million. Of the total costs, \$80.36 million will be for airplanes with 10 to 19 seats and \$37.44 million will be for airplanes with 20 to 30 seats.

The benefit of the Commuter Rule is its contribution to closing the accident rate gap between part 121 and existing part 135 commuter operators. The FAA estimates that closing this gap will prevent 67 accidents over the 15 year period for a total present value benefit of \$350 million. It is not certain how much of the accident-rate gap the final rule will close. In view of this uncertainty, the FAA contends that the final rule will be cost-beneficial because it will have to be only 21 percent effective for costs to equal benefits. Given the broad scope of the rule, the FAA anticipates that, at a minimum, the rule will be this effective and more.

One additional observation needs to be made. The FAA considers the Commuter Rule to be complementary to the Air Carrier Training Program final rule and the Flight Crewmember Duty Period Limitations and Rest Requirements NPRM. A common goal of these three rulemaking actions is to prevent the 67 accidents that represent the accident-rate gap between part 135 commuters and part 121 operators.

In terms of the accident-rate gap, the benefits of the Commuter Rule are a part of this total benefit. However, it is not possible to allocate that benefit among the three rulemaking actions because it is difficult to determine which rulemaking action would prevent a given accident. For example, individual accidents may be prevented by any one