

maintenance (O&M) expenses. The FAA estimates the annual O&M expenses for TCAS II units to be \$1 per flight hour. Based on an estimated utilization rate of 2,000 hours per airplane per year, and the fleet flight hours estimated in the Regulatory Evaluation, the FAA estimates that the total non-discounted O&M expenses for the existing fleet will be approximately \$12,000,000 and \$2,000,000 for the newly manufactured fleet.

The TCAS II equipment will increase the airplane's weight and, thereby, will increase the airplane's annual fuel costs to transport the additional weight. The FAA estimates that the incremental fuel costs resulting in the weight added by the TCAS II system will be approximately \$0.36 per flight hour. This results in a total non-discounted incremental fuel cost of approximately \$4,000,000 for the existing fleet and \$605,000 for the newly manufactured fleet.

Air cargo flight crewmembers who have not trained on TCAS II will need such training to obtain the necessary knowledge, skills, and abilities to safely conduct operations in a TCAS II environment. The FAA estimates that the cost of pilot training will be approximately 0.05 times the cost of the TCAS unit itself. This results in a training cost of approximately \$7,000 per unit per year. The total non-discounted cost of pilot training, for the 20-year analysis period, is estimated to be approximately \$43,000,000 for the existing fleet and \$6,000,000 for newly manufactured cargo airplanes.

The FAA estimates that the total undiscounted TCAS II costs of the final rule, for the existing part 121 turbine-powered all-cargo fleet, during the 20-year analysis period, will be approximately \$127,000,000. We also estimate that the discounted present value of the total costs of the final rule, for the existing part 121 turbine-powered all-cargo fleet over the next 20 years, will be approximately \$92,000,000.

The FAA estimates that the total undiscounted TCAS II costs of the final rule, for the newly manufactured part 121 turbine-powered all-cargo fleet, during the 20-year analysis period, will be approximately \$22,000,000. We also estimate that the discounted present value of the total costs of the final rule, for the newly manufactured fleet over the next 20 years, will be approximately \$11,000,000.

Thus, the FAA estimates that the total undiscounted costs of the final rule for the existing and future manufactured part 121 turbine-powered all-cargo fleet, during the 20-year analysis period, will

be approximately \$149,000,000. The discounted present value of the total costs of this portion of the final rule over the next 20 years will be approximately \$102,000,000.

The final rule requires the installation of TCAS I, (or equivalent), on all part 121 piston-powered cargo airplanes with a MCTOW greater than 33,000 lbs. The FAA estimates that the total initial and installation costs of TCAS I on an existing part 121 cargo piston-powered airplane would be approximately \$75,000. This figure is estimated to include the necessary spare parts inventory.

To calculate the total discounted present value of the compliance costs of the final rule, the FAA assumed that, given the 2-year time period to retrofit TCAS I equipment, the cargo air carrier would minimize its airplane's time out-of-service by installing TCAS I during a regularly scheduled major maintenance (C or D) check. The FAA further assumed that equipping the total air cargo fleet would be spread evenly over the entire 2-year compliance period due to potential maintenance scheduling conflicts and potential maintenance personnel overtime if every cargo air carrier were to try to schedule this installation in year 2. The FAA estimates that the undiscounted initial costs of retrofitting the existing part 121 piston-powered all-cargo fleet greater than 33,000 lbs. MCTOW with TCAS I will be approximately \$2,000,000. In addition to the capital costs of the TCAS I units, the air carriers will also incur annual O&M expenses. The FAA estimates that the annual O&M expenses for TCAS I units to be \$1 per flight hour. Based on an estimated utilization rate of 2,000 hours per airplane per year, the FAA estimates that the total non-discounted O&M expenses for the existing fleet will be approximately \$1,000,000.

The TCAS I equipment will increase the airplane's weight and, thereby, will increase the airplane's annual fuel costs just to transport the additional weight. The FAA estimates that the incremental fuel costs resulting in the weight added by the TCAS I system will be approximately \$0.36 per flight hour, based on the weight of TCAS II. This results in a total non-discounted incremental fuel cost of approximately \$365,000 for the existing fleet.

Air cargo flight crewmembers who have not trained on TCAS I will need such training in order to obtain the necessary knowledge, skills, and abilities to safely conduct operations in a TCAS I environment.

The FAA estimates that the cost of pilot training will be approximately 0.05

times the cost of the TCAS unit itself. This results in a training cost of approximately \$3,800 per unit per year. The total non-discounted cost of pilot training for the 20-year analysis period is estimated to be approximately \$3,500,000 for the existing fleet.

The FAA estimates that the total undiscounted TCAS I costs of the final rule, for the existing part 121 piston-powered all-cargo fleet during the 20-year analysis period, will be approximately \$7,000,000. The discounted present value of the total costs of the final rule for the existing fleet over the next 20 years will be approximately \$4,000,000.

It is anticipated that the existing part 121 fleet that will require TCAS I installation as a result of this final rule will not change in the study period. Therefore, the FAA does not expect additional costs.

The FAA estimates that the total undiscounted costs of the final rule for the part 121 all-cargo fleet, during the 20-year analysis period, will be approximately \$156,000,000. The discounted present value of the total costs of the final rule for part 121 all-cargo carriers over the next 20 years will be approximately \$107,000,000.

Part 125 All-Cargo Commercial Operator Costs

Part 125 all-cargo operators compliance costs and methodology are the same as those used to develop the cost estimates for part 121 all-cargo operators. For the 25 part 125 airplanes requiring TCAS II (or equivalent) as a result of this rule, the total estimated cost is approximately \$10 million with a present value of approximately \$7 million. For the 27 part 125 airplanes requiring TCAS I (or equivalent) as a result of this rule, the total estimated cost is \$5 million with a present value cost approximately equal to \$4 million.

It is anticipated that no additional newly manufactured airplanes will be produced for part 125 commercial operators in the 20-year study period. Therefore, no additional compliance cost for newly manufactured airplanes is anticipated for part 125 operations.

The total non-discounted compliance costs of collision avoidance system requirements for the part 125 operators are estimated to be approximately \$15,000,000. The corresponding present value costs are estimated to be approximately \$11,000,000.

Total Incremental Costs of the Final Rule

The total non-discounted estimated compliance costs of collision avoidance system installations on part 121 all-