non-fire-blocked cushion with a nonfire-blocked cushion. The FAA had also estimated that 10 percent of the 10-to-19-seat airplanes have fire blocked seats because they are offered as an option on currently manufactured models. Further, the FAA had estimated that it would cost \$50,000 for engineering, developing, testing, and documenting the results for FAA approval for those airplanes no longer in production. Finally, allowing operators four years to comply means that they can schedule this retrofitting to fit into the normal cushion reupholstery schedule. Consequently, the existing cushions would not have been prematurely replaced before they would have been replaced due to normal wear and tear.

Based on information received from industry, the FAA estimates that the average retrofitting cost (weighted by the number of each type of airplane model in the existing fleet) will be \$21,500 and the average newinstallation cost (weighted by the number of new airplanes projected to be sold by each manufacturer) will be \$4,875. The average weight of 38 lbs. (for a 19 seat airplane) results in a yearly per airplane fuel cost of \$105. In addition, an industry source reports that airplane operators normally reupholster their seat cushions every four years. Further, the FAA estimates that there will be no engineering costs for current commuter category airplanes because all of the manufacturers offer the fire blocked seat cushions as an option and the engineering and FAA-approval costs have already been incurred. However, the FAA revises its engineering costs for each out-of-production airplane model from \$10,000 to \$5,000 because there are a sufficient number of fabrics that have been approved so that each manufacturer will not have to completely reengineer its seats.

In response to the increase in time (from 4 years to 15 years) to comply with the rule, the FAA assumes that no airplane that will be withdrawn from scheduled-passenger service during those 15 years will be retrofitted with fire-blocking-seat-cushion materials. Further, an operator of an existing airplane that will be employed in scheduled passenger service beyond the 15-year period will wait until the last moment (13 to 14 years) before performing the retrofit. Based on industry statements, commuter-category airplanes are being built with the expectation of a 25-to-30-year lifespan. Also based on industry statements, the initial cost (plus one or two cushion reupholsteries) is less than or about the same as a retrofit 10 or fewer years in the future. The FAA anticipates that

beginning in 5 years, operators will only purchase new airplanes that have factory-installed-fire-blocked seat cushions. Over time, the compliance costs will increase because a greater number of these airplanes will carry the extra 38 lbs. of weight. On that basis, the annual compliance costs will begin at \$150,000 in the sixth year after the effective date and increase to \$1.25 million by the 13th year. The 15-year total will be \$5.88 million (\$2.55 million, present value).

Section 121.317(b)—Fasten Seat Belt Lighted Sign. This section requires that there be a lighted "fasten seat belt" sign that can be controlled by the pilot. In the Regulatory Evaluation of the Proposed Rule, the FAA had not estimated any compliance costs because it was believed that affected airplanes had these lighted signs. Based primarily on information received from industry, the FAA estimates that the total 15-year cost for the 2 lb. device will be \$522,000 (\$269,000, present value). Section 121.342—Pitot Heat

Section 121.342—Pitot Heat Indication System. This section requires all affected airplanes, within 4 years of the rule's effective date, to have a pitot heat indication system that indicates to the flight crew whether or not the pitot heating system is operating. Section 23.1323 requires a pitot heat system for most commuter category airplanes, but there are no requirements for a heat indication system.

In the Regulatory Evaluation for the NPRM, the FAA estimated a per airplane cost of \$500 for a retrofit and \$250 for installation on a newlymanufactured airplane. The FAA did not estimate a weight penalty or costs for inspection, maintenance, and repair, but it had estimated a one-time manufacturer cost of \$10,000 for initial engineering design, testing, and documentation for FAA approval. On that basis, the FAA had estimated that the compliance cost during each of the first four years would be \$280,000 and \$10,000 per year thereafter. The 10-year total costs were estimated to be \$1.184 million or \$993,000, present value.

After additional analysis, the FAA is persuaded that its initial cost estimates need revision. Based on its analysis of the technology required to install these devices, the FAA determines that there is a per airplane cost of \$4,000 for a retrofit and \$2,000 for installation in a newly-manufactured airplane. However, the number of airplanes expected to be sold by the manufacturer who reported this device is standard equipment is subtracted from the expected number of newly-manufactured airplanes that will need to install this device. In addition, the associated equipment and wiring will add 5 lbs. to the airplane. Finally, there will be a \$10,000 one-time cost to engineer, design, test, and obtain FAA approval for the manufacturer of each type certificate.

On that basis, the annual costs in each of the first 4 years will be between \$515,000 and \$535,000 and the annual costs in each year thereafter will be between \$17,000 and \$23,000. The 15year total costs will be \$2.29 million (\$1.87 million, present value).

Section 121.349(c)—Distance Measuring Equipment. This section requires at least one approved distance measuring equipment (DME) unit within 15 months of the final rule publication date for operations under VFR over routes not navigated by pilotage or for operations under IFR or over-the-top. The FAA had estimated no compliance costs for this provision and there were no comments on this provision. After additional analysis, however, the FAA determines that some airplanes are affected by this requirement.

Based on the 1994 AOPA Pilot General Aviation Aircraft Directory and Avionics Directory and Buyer's Guide, the FAA estimates that the average price of a 25 lb. DME for an airplane is \$7,000 and it will cost another \$7,000 to retrofit for a total cost of \$14,000. The FAA General Aviation and Air Taxi Activity and Avionics Survey for 1993 reports that 3.1 percent of the turboprops in service (twenty-three 10-to-19-seat airplanes and ten 20-to-30-seat airplanes) do not have this device but that all newly-manufactured airplanes will have this device installed. On that basis, the FAA estimates that the firstyear-compliance cost is \$434,000 (\$294,000 for 10-to-19-seat airplanes and \$140,000 for 20-to-30-seat airplanes) and the 15-year-compliance cost is \$452,000 of which \$303,000 is for 10-to-19-seat airplanes and \$149,000 is for 20-to-30-seat airplanes (\$418,000, present value of which \$281,000 is for 10-to-19-seat airplanes and \$137,000 is for 20-to-30-seat airplanes).

## 4. Maintenance

The FAA estimates that over the 15year period, the total cost of compliance for the relevant maintenance sections affected by the final rule will amount to an estimated \$18.18 million (\$11.92 million, present value). A discussion of the individual maintenance costs is presented below.

Section 121.361 Applicability. The final rule requires all affected commuter operators to have an airplane maintenance program that is appropriate for part 121 operations. All part 135 commuters currently operating