quantify, to the extent practicable, estimated costs and anticipated benefits to the private sector, consumers, and Federal, State, and local governments.

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) Would generate benefits that would justify its costs and is not a "significant regulatory action'' as defined in the Executive Order; (2) is not significant as defined in Department of Transportation **Regulatory Policies and Procedures; (3)** would not have a significant impact on a substantial number of small entities; and (4) would not have a negative impact on international trade. These analyses, available in the docket, as summarized below.

As discussed earlier, several commenters to the ANPRM claim that the benefits of fuel system vent protection would not outweigh the costs. The FAA disagrees with these claims. The Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee identified four accidents worldwide in which effective fuel vent fire protection could have prevented or delayed post-crash fires (Malaysian Airways Comet 4, Singapore, 1964; TWA 707, Rome, 1964; BOAC 707, London, 1968; and Seaboard World DC-8, Stockton, 1969. After sustaining relatively minor impact damage, all four airplanes were destroyed by fire and explosions, resulting in 53 fatalities and 55 serious injuries. As summarized below, the number of fuel tank fires that this proposed rule might prevent is expected to be low, but the expected value of averting a single incident would exceed the estimated compliance costs.

### Costs

The FAA assumes that manufacturers and operators would use vent flame arrestors as the most effective and economical means of compliance. For a representative large transport airplane, the FAA estimates that non-recurring costs would be approximately \$700 and that recurring operating costs would be approximately \$51 per year. Corresponding estimates for a representative small transport airplane are approximately \$400 in non-recurring costs and \$51 in recurring costs.

Section 25.954 currently requires, in part, that fuel systems be designed to prevent ignition within the fuel system by lightning strikes and other electrostatic phenomena. Flame arrestors and suppressors are offered as standard or optional equipment on most U.S. transport airplanes in current production. Approximately 75 percent of the transport airplane fleet currently have devices that might meet the criteria of the proposed rule. Until actual testing and evaluation is performed, however, it cannot be determined whether these devices would qualify. For purposes of this cost analysis, therefore, all relevant airplanes are assumed to be affected.

Based on this premise, approximately 11,048 airplanes would be affected during the first ten years following the effective date of the rule. applying the unit costs summarized above to this number of airplanes yields a total cost of \$18.8 million (constant dollars), or \$11.5 million discounted to present value. The average annualized costs per airplane are \$142 for large transport airplanes and \$120 for small transport airplanes.

# Benefits

Since the four accidents identified by the SAFER Advisory Committee, there have been no known accidents in which fuel vent fire protection would have prevented or delayed post-crash fires. This is attributable in part to regulatory and voluntary initiatives aimed aircraft fire safety, such as the use of less volatile fuels, and improve safety performance that reduced the opportunities for post-crash fires.

Notwithstanding the absence of fuel tank fires in recent years and lacking other sufficient bases upon which to estimate the risks of future fires, the merits of the proposed rule can be assessed by considering the number of incidents that would need to be prevented to offset the costs of the rule. For large passenger-configured transport airplanes, the prevention of one fuel tank fire during the operating lives of such airplanes affected during the first ten years of the rule would yield expected benefits of approximately \$106 million, or \$40.1 million discounted to present value. This estimate reflects an accident involving a representative large transport airplane with 130 occupants and 20 percent fatality and 20 percent serious injury rates. Corresponding estimates for small passenger-configured and cargo-configured transport airlines would be \$15 million (\$5.7 million

discounted) and \$16 million (\$6.0 million discounted), respectively.

### **Summary of Costs and Benefits**

The FAA finds the proposed rule to be cost beneficial because the expected benefits of preventing just one postcrash fire outweigh the expected costs (\$40.1 million in benefits versus \$7.3 million in costs for large passengerconfigured transport airplanes; \$5.7 million in benefits versus \$4.2 million in costs for small passenger-configured transport airplanes; and \$6.0 million in benefits versus \$5.7 million in costs for cargo-configured transport airplanes). If this action is not taken, a hazard would continue to exist, even though effective and low-cost means are available to minimize or eliminate it. To the extent that existing devices might satisfy the proposed criteria, the total incremental costs would be less than those summarized above.

#### **Regulatory Flexibility Determination**

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by government regulations. The RFA requires agencies to evaluate alternative remedies when a rule would have a "significant economic impact on a substantial number of small entities." The FAA has determined that the proposed rule would not have a significant impact on a substantial number of small entities."

## **Trade Impact Statement**

The proposed rule would have no impact on trade opportunities for U.S. firms doing business in foreign markets and foreign firms doing business in the U.S. market.

#### **Federalism Implications**

The regulations proposed herein would not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this proposal would not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

#### Conclusion

Because the installation of fuel system vent protection equipment is not expected to result in a substantial economic cost, the FAA has determined that this proposed regulation is not significant under Executive Order 12866. In addition, the FAA has

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