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REGULATORY EVALUATION, INITIAL REGULATORY FLEXIBILITY DETERMINATION, TRADE IMPACT ASSESSMENT, AND UNFUNDED MANDATES ASSESSMENT

Certification of Airmen and Aircraft for the Operation of Light-Sport Aircraft

Notice of Proposed Rulemaking (14 CFR Parts 1, 21, 43, 45, 61, 65, and 91)

**OFFICE OF AVIATION POLICY AND PLANS,
OPERATIONS REGULATORY ANALYSIS BRANCH, APO-310**

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EXECUTIVE SUMMARY

This draft regulatory evaluation examines the costs and benefits of proposed amendments to 14 CFR parts 1, 21, 43, 45, 61, 65, and 91 that would establish new certification requirements for pilots, aircraft, and repairmen to operate and maintain light-sport aircraft.

The FAA is proposing to establish requirements for the certification, operation, and maintenance of light-sport aircraft, to include powered parachutes and weight-shift-control aircraft. In addition, the FAA is proposing a new category of special airworthiness certificate for light-sport aircraft that meet an industry-developed consensus airworthiness standard. The proposal also would revise the requirements for the issuance of experimental certificates to include light-sport aircraft.

The proposal became necessary in order to provide a reasonable and appropriate means of certification for pilots and aircraft that operate in the range between ultralight vehicles and experimental amateur-built/kit-built aircraft or primary category aircraft. Some of the major characteristics of what would be defined as light-sport aircraft include two-seats or less, a maximum certificated takeoff weight of 1,232 pounds or less, and a maximum stall speed of 39 knots (airplanes only).

For the operation of light-sport aircraft, the FAA is proposing to establish a sport pilot certificate and a flight instructor certificate with a sport pilot rating. The FAA also is proposing to establish requirements for student pilots and private pilots to operate these aircraft, and to revise the recreational pilot certificate to align it with privileges proposed for the new sport pilot certificate. The FAA proposes a new repairman certificate with ratings for individuals who would inspect and maintain light-sport aircraft.

The proposal would impose an estimated compliance cost of $40.4 million ($34.0 million, discounted) in 1999 dollars over the next 10 years (2002 - 2011). This cost estimate is based on three components: (1) certification costs for light-sport aircraft of $13.9 million ($11.8 million, discounted), (2) certification of repairmen and annual condition inspection costs of light-sport aircraft of $16.7 million ($14.4 million, discounted), and (3) sport pilot and flight instructor certification costs of $9.8 million ($7.8 million, discounted). Conversely, the 10-year potential benefit of the proposed rule would be $221.4 million ($153.3 million, discounted). The estimated benefits are based only on the avoidance of fatalities in these accidents. The FAA believes that some of the identified benefits may not be achieved. However, if the proposed rule is 23 percent effective, or more, then the rule would be cost-beneficial.

The proposal would not impose a significant economic impact on a substantial number of small entities. In terms of international trade, the proposal would not impose a competitive trade disadvantage to U.S. manufacturers of light-sport aircraft operating domestically (and exports abroad) or to foreign manufacturers of light-sport aircraft operating abroad (and imports into the United States). In terms of the Unfunded Mandates Act, the proposal would not impose a Federal mandate of greater than $100.0 million per year on any sector of the U.S. economy (private, State, local or tribal governments).

I. INTRODUCTION

This regulatory evaluation examines the costs and benefits of proposed amendments to 14 CFR parts 1, 21, 43, 45, 61, 65, and 91 that would establish new certification requirements for pilots, aircraft, and repairmen to operate and maintain light-sport aircraft.

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For the operation of light-sport aircraft, the FAA is proposing to establish a sport pilot certificate and a flight instructor certificate with a sport pilot rating. The FAA also is proposing to establish requirements for private pilots to operate powered parachutes and weight-shift-control aircraft, and to revise the recreational pilot certificate to align it with privileges proposed for the new sport pilot certificate. The FAA proposes a new repairman certificate with ratings for individuals who would inspect and maintain light-sport aircraft.

II. BACKGROUND

A. The Problem

The state of the art in ultralight vehicles covered under part 103 has advanced considerably since 1982 when the FAA first issued that part. Advances include the refinement of light-engine technology and reliability, more effective application of low-speed aerodynamic principles, and the use of a wide range of new materials. Since the FAA issued part 103, individuals and entrepreneurs have sought to serve the developing community of sport aviators by creating a wide variety of ultralight vehicles that are slow and are still relatively simple to operate. The need for training in these vehicles led industry to develop two-place training vehicles and to establish programs to qualify ultralight flight instructors. However, as a result of weight, performance, or seating capacity, these vehicles do not meet the current definition of ultralight vehicles, despite the

fact that in operational terms, they are primarily suited to the same type of recreational or sport flying as those ultralight vehicles that may be operated under part 103.

Although the ultralight community currently administers voluntary registration and training programs for ultralight owners and operators, as well as voluntary manufacturer-developed programs for ultralight airworthiness, no appropriate provisions exist in the regulations for FAA certification of ultralight operators, ultralight flight instructors, or ultralight vehicles. Vehicles that are used to provide training to these operators, however, do not meet the provisions of part 103. Therefore, the FAA has issued exemptions to allow a person to operate a vehicle that does not meet the definition of an ultralight under part 103 for the purpose of receiving flight training and becoming proficient in the operation of these vehicles. However, under present exemptions two-seat vehicles can be used only for flight training and not for the full range of sport or recreational flight.

Since 1982 the FAA has taken several initiatives to address sport and recreational general aviation needs. First, the FAA issued regulations under 14 CFR part 103 regarding ultralight vehicles (47 FR 38776, September 2, 1982). Second, the FAA created the recreational pilot certificate under 14 CFR part 61 (54 FR 13028, March 29, 1989). Finally, the FAA established a new primary category aircraft under 14 CFR part 21 (57 FR 41367, September 9, 1992).

The Ultralight Vehicle

The FAA adopted part 103 in 1982 (47 FR 38776; September 2, 1982) in response to existing and rapidly growing hang glider activity. By that time, earlier guidance provided by FAA Advisory Circular (AC) 60-10, "Recommended Safety Parameters for Operation of Hang Gliders," (May 16, 1974) was no longer adequate to cover the operations of the more advanced hang gliders. In promulgating part 103, the FAA determined that certain hang gliders, including those with a powerplant, should be classified under part 103 as ultralight vehicles. Part 103 defines an ultralight as either an unpowered or powered vehicle with certain weight and other limitations. An ultralight vehicle may carry only one occupant and must be used or intended to be used for sport and recreation. An ultralight vehicle does not have a U.S. or foreign airworthiness certificate. Except for ultralights operating under exemptions, only ultralight vehicles that meet the following limitations are allowed to operate under part 103:

(1) if unpowered, the vehicle must weigh less than 155 pounds (lbs); (2) if powered, the vehicle must weigh less than 254 lbs empty weight, excluding floats and safety devices intended for deployment in a potentially catastrophic situation. It must also have a fuel capacity of less than 5 U.S. gallons (gal), a full-power level flight airspeed capability of no more than 55 knots (kts) calibrated airspeed (CAS), and a power-off stall speed of no more than 24 kts CAS.

Persons operating ultralight vehicles are required to comply with certain operating restrictions. For example, ultralight vehicles must: (1) be operated for sport and recreation only, (2) be generally operated between the hours of sunrise and sunset, (3) yield the right-of-way to all aircraft, (4) not be operated over congested areas or over any open air assembly of persons, (5) not be operated in a manner that creates a collision hazard with respect to other aircraft or in a manner that creates a hazard to other people or property, (6) be operated only with authorization in prohibited or restricted areas or in certain other airspace, and (7) not be operated for compensation or hire.

Ultralight vehicles are not subject to the aircraft certification requirements of 14 CFR part 21, the maintenance requirements of 14 CFR part 43, the identification and marking requirements of 14 CFR part 45, or the registration requirements of 14 CFR part 47. In addition, the persons operating these vehicles are not subject to the airman certification requirements in 14 CFR part 61, medical certification requirements in 14 CFR part 67, or the operating rules in 14 CFR part

91. However, in promulgating part 103, the FAA determined that there was a need for some operating restrictions for these ultralight vehicles to avoid conflicts with other air traffic and to protect persons and property on the ground.

Recreational Pilot Certificate

The FAA established the recreational pilot certificate under part 61 in 1989 (54 FR 13028; March 29, 1989). The FAA intended for the recreational pilot certificate to provide a lower cost alternative to the private pilot certificate. The FAA believed that the recreational pilot certificate would be particularly attractive for persons interested in flying basic, experimental, or homebuilt aircraft. A recreational pilot may operate a single-engine airplane or rotorcraft certificated for no more than four occupants with a powerplant of no more than 180 horsepower (hp). In promulgating the rule, the FAA increased pilot limitations compared to those placed on private pilots, but decreased the requirements for the issuance of a recreational pilot certificate. The recreational pilot is subject to the same limitations as a private pilot but also has limitations, such as not being permitted to— (1) carry more than one passenger, (2) tow an object, (3) fly between sunset and sunrise, (4) fly above 10,000 feet MSL or 2,000 feet AGL, whichever is higher, without visual reference to the surface, (5) demonstrate an aircraft to a prospective buyer, or (6) act as pilot in command of an aircraft away from the departure airport without a logbook endorsement, or to operate in

airspace in which communication with air traffic control (ATC) is required. However, in this NPRM, the FAA is proposing to allow a recreational pilot to operate in airspace in which communication with ATC is required, as long as the pilot receives training on that operation and an endorsement authorizing it. This would parallel a similar privilege for proposed sport pilots.

Primary Category Aircraft

In 1992 the FAA established primary category aircraft under §§ 21.24 and 21.184 (57 FR 41367, September 9, 1992). The FAA promulgated this rule based on the public's concerns about the decline in general aviation in the United States due to higher certification costs for the production of aircraft. In response to these concerns, the FAA established a new primary category of aircraft with simplified procedures for type, production, and airworthiness certification. Primary category aircraft must be either: (1) unpowered; (2) an airplane powered by a single, naturally aspirated engine, with a 61-knot-or-less stall speed limitation; or (3) a rotorcraft with a 6-pound-per-square-foot main rotor disc loading limitation. In addition, primary category aircraft may not exceed a 2,700-pound certificated weight (or 3,375 lbs for seaplanes), a seating capacity of four, and must have unpressurized cabins. Primary category aircraft may not be used for the carriage of persons or property for hire, although under certain conditions they may be available for rental as well as for flight instruction. The FAA may issue a primary

category type and production certificate to a manufacturer through a simplified process in which the applicant shows compliance with applicable airworthiness requirements.

ARAC Recommendation

The Aviation Rulemaking Advisory Committee (ARAC) was established in 1991 to assist the FAA in the rulemaking process by providing input from outside the Federal government on major regulatory issues affecting aviation safety. The ARAC includes representatives of air carriers, manufacturers, general aviation, labor groups, universities, associations, airline passenger groups, and the general public.

The FAA asked the ARAC to review part 103 and to make a recommendation to the FAA concerning whether new or revised standards are appropriate. On August 30, 1993, the FAA announced the formation of an ARAC Part 103 (Ultralight Vehicles) Working Group (58 FR 47172, September 7, 1993). As part of the initial task, the FAA asked the working group to consider the petition for rulemaking from USUA to amend part 103 (docket No. 25591).

After numerous discussions at the working-group level and after consultation with the FAA, the Working Group reported to the ARAC and the ARAC initially recommended to the FAA the following:

> 1. The current privileges and limitations under part 103 should remain intact and the related exemptions should be continued.

2. The primary category requirements of section 21.24 adopted in 1992 (57 FR 41367, September 9, 1992) are sufficiently flexible and efficient to allow the certification of many aircraft under consideration by this group [the ARAC]. An aircraft manufacturer can choose to: (a) Certificate as an aircraft under the primary category a vehicle of a size that would currently be eligible to operate under part 103; (b) Sell aircraft as kit aircraft, leaving certification to the builder; or (c) Build non-certificated vehicles under part 103. It must be recognized that an extremely low number of vehicles are produced or imported each year for some segments of aviation activity beyond part 103 and for some two-place operations conducted under part 103 exemptions. Primary category certification is not economically feasible presently or in the near future for these operations. Continued use of exemptions and potential future regulatory action would be required for these operations.

3. The current recreational pilot certification rules in part 61 are unnecessarily restrictive and do not accommodate the scope of operations for persons who are interested in flying a wide variety of small, slow, single and two-place aircraft.

On June 16, 1995 (60 FR 33247, June 27, 1995), the FAA revised its task for the ARAC. When considering the USUA petition for rulemaking, the Ultralight Vehicles Working Group then determined that they should focus on developing a new "sport pilot certificate." The final ARAC recommendation called for new regulations under part 61 to create a new "sport pilot" certificate. This proposed certificate would require a pilot to meet the knowledge and skill requirements needed to operate a diverse variety of small, lightweight, aircraft that have emerged since the early 1980's. The ARAC approached the sport pilot certificate as an entry into certificated flight to address the very different, unique, and diverse types of sport and recreational aircraft operations. Training and certificating airmen in the diverse categories, classes, and types of aircraft used in sport and

recreational aviation are not addressed in the recreational pilot certificate issued under current part 61. The ARAC recommended additional privileges for the sport pilot certificate, which are not available under the current recreational pilot certificate. Although the ARAC also considered amending the recreational pilot certification rules, it did not recommend this approach because the recreational pilot certificate authorizes flight in more sophisticated aircraft (e.g., four-place aircraft, or aircraft with a powerplant up to 180 hp) than would be permitted under the proposed sport pilot certificate.

As the result of this recommendation, the FAA revised the task previously assigned to the ARAC to broaden its scope. Rather than tasking ARAC to review part 103 to recommend whether new or revised standards for part 103 are appropriate, the FAA's revised task for ARAC was to review part 103 and recommend "whether new or revised standards, under part 103 or other regulations that may be affected, are appropriate."

In the absence of the proposal, participants in sport and recreational activities flying aircraft that are too large to fall within part 103 would have to operate under part 91 and obtain a private or recreational pilot's certificate in order to engage in such flying activities. The costly nature of obtaining a private pilot's certificate ($3,800, on average, for individuals or $7,500, on average, for flight instructors) imposes significant limitations

on many operators to engage in such sport and recreational aviation activities. The proposal is intended to eliminate this cost impediment while enhancing aviation safety by requiring additional training and aircraft safety standards.

B. The Proposal

The proposal would amend 14 CFR parts 1, 21, 43, 45, 61, 65, and 91. As shown in Tables A and B below, this section discusses, in general terms, two key factors of the proposal: aircraft certification and pilot certification.

The FAA is proposing to add a new category of special airworthiness certificate (light-sport) to the list of purposes for which a special airworthiness certificate can be issued, as specified in section 21.186 (see Table A, item II.D). Aircraft issued this special light-sport airworthiness certificate could be used for sport and recreation, flight training and rental. The special airworthiness certificate would ensure that aircraft used for this purpose are designed and manufactured to an identified standard.

The FAA also is proposing to add light-sport aircraft to the list of purposes for which an experimental airworthiness certificate can be issued, as specified in section 21.191. That section specifies several purposes for which an aircraft can receive an experimental certificate, including operating amateur-built aircraft and operating kit-built aircraft. The FAA would add the purpose "operating

light-sport aircraft." There would be three ways to obtain an experimental airworthiness certificate for the purpose of operating light-sport aircraft. (See Table A, item II.G.9.).

The first purpose (item II.G.9.a.) is intended to provide for a person to obtain an experimental certificate for an existing light-sport aircraft if that person applies to register the aircraft before 24 months after the effective date of the rule. An experimental airworthiness certificate for the aircraft would have to be issued before 36 months after the effective date of the rule. This provision would apply only to aircraft that do not meet the definition of ultralight vehicle in section 103.1. These aircraft could be used for sport and recreation and for flight training; however, initial flight training for compensation and hire would not be permitted after 36 months after the effective date of the rule (assuming adoption of the proposal).

The second purpose (item II.G.9.b.) is intended to provide for a person to obtain an experimental certificate for a light-sport aircraft if the aircraft was assembled from an eligible kit by a person without the supervision and quality system of the manufacturer. The aircraft could be used only for the purpose of sport, recreation, and flight training.

Finally, (item II.G.9.c.) a person could obtain an experimental certificate for a light-sport aircraft if the aircraft previously was

issued a special airworthiness certificate in the light-sport category under section 21.186. These aircraft could be used only for sport, recreation, and flight training.

Table A
Aircraft Airworthiness Certificate

Airworthiness Certificates	Categories/Other	Purposes of Experimental Category Certificate
I. Standard	A. Normal B. Utility C. Acrobatic D. Commuter E. Transport F. Manned free balloons G. Special classes of aircraft	
II. Special	A. Primary B. Restricted C. Limited * D. Light-Sport (§ 21.186) E. Provisional F. Special Flight Permits G. Experimental (§ 21.191)	1. Research and development 2. Showing compliance with regulations 3. Crew training 4. Exhibition 5. Air racing 6. Market surveys 7. Operating amateur-built aircraft 8. Operating primary category kit-built aircraft *9. Operating light-sport aircraft (§ 21.191(i)) a. existing aircraft that do not meet part 103 b. kit-built, light-sport aircraft c. aircraft previously certificated under § 21.186

* New airworthiness certificate categories and/or purposes

To allow operations in these new aircraft, the FAA is proposing a new pilot certificate and two new aircraft category ratings (see Table B). Current pilot certificates include (1) student, (2) recreational, (3)

private, (4) commercial, and (5) airline transport. To these pilot certificates, the FAA would add a new student pilot certificate for operating light-sport aircraft and a new sport pilot certificate. The sport pilot certificate would be issued without any category ratings. Aircraft category privileges would be granted through logbook endorsements. Current aircraft category ratings include (1) airplane, (2) rotorcraft, (3) glider, (4) lighter-than-air, and (5) powered-lift. To these aircraft categories, the FAA would add powered parachute and weight-shift-control aircraft. To the weight-shift-control aircraft category rating, the FAA also would add land and sea class ratings.

Table B
Pilot Certification

Certificates	Aircraft Category Rating	Class
I. Pilot 1. a. Student * b. Student (operating light-sport aircraft) * 2. Sport 3. Recreational 4. Private 5. Commercial 6. Airline Transport	1. Airplane 2. Rotorcraft 3. Glider 4. Lighter-Than-Air 5. Powered-Lift *6. Powered Parachute *7. Weight-Shift-Control	1. Single/multi-engine, Land/Sea 2. Helicopter/Gyroplane 3. Airship/Balloon *4. Land/Sea
II. Flight Instructor	1. Airplane 2. Rotorcraft 3. Glider 4. Powered-Lift *5. Sport Pilot	1. Single/multiengine 2. Helicopter/Gyroplane

* New certificates, aircraft category and class ratings.

The FAA also is proposing to revise the recreational pilot certificate privileges to align them with the proposed privileges for sport

pilots, primarily to permit operation in Class B, C, and D airspace with the requisite training and endorsements. The FAA also is proposing to revise the training requirements for the private pilot certificate to permit private pilots to operate powered parachutes and weight-shift-control aircraft. This proposal would not revise other pilot certificates to permit operation of powered parachutes or weight-shift-control aircraft.

In addition to pilot certification, the FAA would address flight instructor certification, ground instructor privileges, and repairman certification. The FAA would add a new rating for flight instructors-the sport pilot rating-and would revise privileges for ground instructors to train sport pilots and flight instructors with a sport pilot rating. The FAA also would add a new repairman certificate, which could be issued with a maintenance or inspection rating.

III. MAJOR ASSUMPTIONS

The cost and benefit estimates contained in this regulatory evaluation are based on the following general assumptions and definitions:

1. Implementation of the proposal is assumed during calendar year 2002.

2. The time horizon for this regulatory evaluation is 10 years. This time horizon starts at the issuance date of the proposed rule and extends for 10 years.

3. Unless otherwise referenced, the source of all the data used in this evaluation is the Department of Transportation, Federal Aviation

Administration, Office of Policy and Plans, Operations Regulatory Analysis Branch (APO-310).

4. Unless otherwise stated, all monetary values are expressed in 1999 undiscounted dollars. Discounted estimates are calculated by using a 7 percent discount rate over the 10-year period.

5. The group of entities potentially affected in this evaluation includes persons who would operate ultralight vehicles that exceed current ultralight regulations and those who would manufacture those aircraft. Persons who maintain and inspect these aircraft also would be affected. These aircraft would be operated under part 91 by either a recreational or private pilot in the absence of the proposal. These vehicles fall between ultralight vehicles and experimental amateur-built/kit-built aircraft or primary category aircraft.

6. Based on the informed judgement of FAA and ARAC technical personnel, the following assumptions have been employed in this evaluation regarding proposed sport pilots and flight instructors with sport pilot ratings.

Sport Pilots

- The number of existing light-sport aircraft operators initially affected by the proposal is estimated to be 9,000[1]. About 6,000 (.67 x 9,000) and 3,000 (.33 x 9,000) existing aircraft operators, respectively, would be affected in 2002 and 2003. The rationale for this assessment is based on the fact that operators seeking a sport pilot certificate would have only 24 months to apply for registration of their aircraft that currently do not meet part 103, and 36 months to have an airworthiness inspection to certificate their aircraft. Since nearly all of the most costly requirements would have to be met during the first 24 months, operators are expected in this evaluation to take the next step and complete the remainder of their requirements during this same period.

- In addition to the estimated 9,000 existing sport pilots, an average number of new sport pilots annually is estimated to be 2,200[1] for each of the first three years (2002 - 2004) after implementation of the proposal, and 220 annually from 2005 - 2011[1].

- Average cost of obtaining a sport pilot certificate is estimated to be $750[1], as the result of the proposed rule.

[1] Obtained from FAA technical personnel and light-sport aircraft industry sources.

- Cumulative number of sport pilot Biennial Flight Reviews (BFRs) conducted over the next 10 years is estimated to be 62,180. For example, those existing (6,000) and new (2,200) operators affected in 2002 would be required to have their BFRs in 2004. Similarly, those existing (3,000) and new (2,200) operators affected in 2003 would be required to have their BFRs in 2005. This process would be repeated, for all of the affected operators, up to the tenth year of the time horizon used for this evaluation.

- Average cost of BFRs for sport pilots is estimated as $50.00[1].

- Of the estimated 9,000 individuals expected to seek sport pilot certificates during 2002 - 2003 about 75 percent (or 6,750) of them would receive credit for their experience (i.e., flight experience and knowledge) toward the proposed sport pilot certificate requirements. This assessment is based on the informed judgement of FAA technical personnel in the Office of Aviation Flight Standards Service (AFS) and industry representatives. Thus, only 2,250 individuals seeking sport pilot certificates would incur the full cost impact of the proposal, based on information received from FAA's technical personnel in AFS. These operators, however, would still be subject to all of the proposed new aircraft and repairman certification requirements.

Flight Instructors

- Number of flight instructors with a sport pilot rating initially affected by the proposal is estimated to be 670 in 2002 and 330 in 2003. The estimation procedure rationale used to derive these numbers is similar to that described for sport pilots.

- Average number of new flight instructors with sport pilot ratings impacted annually is estimated to be 250 for each year from 2002 to 2004. From 2005 to 2011, this estimate would be reduced to 25 annually.

- Average cost of a flight instructor certificate with a sport pilot rating is estimated to be $1,400 as the result of the proposal.

- Cumulative number of flight instructors with a sport pilot rating who would be subject to renewal of flight instructor certificates every 24 months is estimated to be 6,975.[2]

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[2] If the flight instructor certificate with a sport pilot rating is not renewed within 24 months of issuance, it must be reinstated.

- Average cost of a renewal of a flight instructor certificate with sport pilot rating is estimated to be $75.00 (if the proposal were to become a final rule).

- Of the 1,000 existing pilots operating light-sport aircraft expected to seek flight instructor certificates with sport pilot ratings, an estimated 75 percent or 750 of them would receive credit for their experience (i.e., flight experience and knowledge) toward the new flight instructor certificate with a sport rating. This assessment is based on the informed judgement of FAA technical personnel in the Office of Aviation Flight Standards Service (AFS) and industry representatives. These instructors, however, would still be subject to all of the proposed new aircraft and repairmen certification requirements. Thus, only 250 (1,000 x .25) pilots seeking flight instructor certificates with sport pilot ratings would incur the full cost impact of the proposal, based on information received from FAA's technical personnel in AFS.

7. Based on information received primarily from FAA technical personnel and industry representatives, this evaluation assumes the following:

- Among the 19,065 light-sport aircraft operators seeking certificates over the next 10 years, about 90 percent of them would elect to obtain a repairman certificate for personal use, about 5 percent of them would obtain a repairman certificate for commercial use. Most operators would seek this certificate as a means of complying with their annual condition inspection requirements and the 100-hour inspection requirements for rental aircraft. However, about 5 percent of operators would elect to pay a certificated repairman with a maintenance rating (for light-sport aircraft) to conduct their annual condition inspections.

- Of the 10,000 existing light-sport aircraft operators affected initially by the proposal, about 50 percent are assumed to operate fixed-wing vehicles and the remainder would consist of powered parachutes and weight-shift control aircraft (e.g., trikes). In the absence of the proposal, this evaluation assumes that the fixed-wing vehicles would be subject to the more stringent certification requirements of primary category aircraft and subject to operations under part 91. This evaluation also assumes that light-sport aircraft, other than fixed-wing types (e.g., powered parachutes or weight-shift control) do not provide a method for aircraft certification of powered parachutes. They can not be certificated under experimental amateur-built, primary, or standard category.

Additionally, weight-shift control aircraft can not be certificated under standard or primary category.

- Based on information received from industry, about 80 percent of all U.S. light-sport aircraft manufacturers are assumed to be in compliance with the aircraft certification requirements that would result from the proposal, as the result of their adherence to the international standards. Such standards are very similar to those aircraft certification requirements that would result from the proposal.

8. Under the proposal, most potentially affected existing light-sport aircraft would be categorized as experimental (as explained in more detail in the preamble to the NPRM). Similarly, most newly produced aircraft affected by this proposal would be categorized as special light-sport aircraft or experimental/kit-built aircraft. These types of aircraft have been evaluated accordingly.

9. In this regulatory evaluation, a number of references are made about information obtained from industry representatives. Industry representatives refer to "technical individuals" (pilots, flight instructors, engineers, etc.) and several ultralight and light-sport aircraft trade groups such as the Experimental Aircraft Association, the United States Ultralight Association, and Aero Sports Connection. In addition, "industry representatives" or "industry sources" refers to technical employees with manufacturers of light-sport aircraft.

10. This regulatory evaluation assumes that each affected sport pilot or flight instructor (with a sport pilot rating) owns or operates one light-sport aircraft.

11. This evaluation assumes that no aspect of the proposal would have an adverse impact on aviation safety by allowing light-sport aircraft operators to fly into Class B, C, and D airspace areas. This assessment relies on the fact that this proposed rule would allow sport pilots to conduct operations in Class B, C, and D airspace areas, provided they meet certain requirements. Among the requirements sport pilots must meet when operating in such airspace areas include two-way communication and Mode C transponder equipment, as appropriate. These and other requirements would ensure that the existing level of aviation safety would remain intact from operations by sport pilots in Class B, C, and D airspace areas.

VI. ANALYSIS OF COSTS AND BENEFITS

A. Cost Impact Overview of Amended 14 CFR Parts

This proposal would amend 14 CFR parts 1, 21, 43, 45, 61, 65, and 91. In terms of potential cost impacts, each of these parts is briefly examined below:

Part 1 - Definitions and Abbreviations

The proposal would amend 14 CFR part 1 by adding definitions for powered parachutes, weight-shift-control aircraft, light-sport aircraft, and consensus standard. None of these definitions would impose any additional costs on potential operators of light-sport aircraft. Such definitional changes would only clarify the intent of the proposal. Conclusion: No probable cost impact.

Part 21 - Certification Procedures for Products and Parts

The proposal would amend 14 CFR part 21 by providing for the issuance of special light-sport aircraft airworthiness certificates for newly manufactured light-sport aircraft and experimental airworthiness certificates for the purpose of operating light-sport aircraft as an experimental aircraft. The new special and experimental airworthiness certificates would be issued for the purposes of: (1) sport and recreation operations and (2) flight training and rental activities. Conclusion: Probable cost impact.

Part 43 - Maintenance, Preventive Maintenance, Rebuilding, and Alteration

When an aircraft is issued a light-sport special airworthiness certificate, the proposal would exempt such aircraft from the maintenance and recordkeeping requirements of part 43.

The proposal would not impose any additional burden on light-sport aircraft operators because it would allow them to meet the more appropriate maintenance requirements of proposed section 91.327, as shown in the operations limitations for their aircraft. Conclusion: No probable cost impact.

Part 45 - Identification of Aircraft and Related Products

The proposal would amend 14 CFR part 45 by requiring each operator of a powered parachute or weight-shift-control aircraft to display the mark required by section 45.23.

At present, the FAA believes that nearly all existing light-sport aircraft operators registered with ultralight organizations are already performing this task. Conclusion: No probable cost impact.

Part 61 - Certification of Pilots and Flight Instructors

The proposal would amend 14 CFR part 61 by establishing requirements for the issuance of a new sport pilot certificate. Recipients of the

certificates would need to meet the knowledge and skill requirements to operate a diverse category of small, lightweight, aircraft that have emerged since the early 1980's[3]. The proposal also provides for the issuance of flight instructor certificates with a sport pilot rating. These requirements would apply to anyone who is: (1) A student pilot authorized to operate light-sport aircraft, (2) Anyone who is seeking a sport pilot certificate, and (3) anyone who is seeking a flight instructor certificate with a sport pilot rating or ground instructor privileges. Conclusion: Probable cost impact.

Part 65 - Certification of Airmen Other than Flight Crewmembers

The proposal would amend 14 CFR part 65 by establishing a repairman certificate for applicants who obtain appropriate training. Such individuals must acquire specific training before a repairman certificate would be issued. Conclusion: Probable cost impact.

Part 91 - General Operating and Flight Rules

The proposal would amend 14 CFR part 91 by requiring operating limitations for light-sport aircraft. These operating limitations

[3] This proposed requirement would also afford operators of weight-shift-control aircraft (for example, trikes) and powered parachutes an opportunity to obtain a private pilot's certificate, provided they undergo the required training. This option would potentially enhance aviation safety if such operators were to adopt it. The safety merits of the private certificate option for these operators will be discussed in more detail in the potential safety benefits subsection of this regulatory evaluation.

would state the conditions under which light-sport aircraft must be operated. Conclusion: Probable cost impact.

B. Analysis of Costs

The proposal would impose an estimated compliance cost of $40.4 million ($34.0 million, discounted) in 1999 dollars over the next 10 years (2002 - 2011). This cost estimate is based on three components: (1) certification costs for light-sport aircraft of $13.9 million ($11.8 million, discounted), (2) certification of repairmen and annual condition inspection costs of light-sport aircraft of $16.7 million ($14.4 million, discounted), and (3) sport pilot and flight instructor certificate costs $9.8 million ($7.8 million, discounted). Each of these cost components is discussed below:

Light-sport Aircraft Airworthiness Certification Costs

This section of the proposal would amend 14 CFR part 21 by providing for the issuance of special light-sport aircraft and experimental light-sport aircraft airworthiness certificates. Specifically, existing light-sport aircraft would obtain experimental light-sport airworthiness certificates and newly manufactured light-sport aircraft would obtain special light-sport airworthiness certificates. All newly manufactured light-sport kit-built aircraft would obtain experimental light-sport airworthiness certificates. The special and experimental light-sport aircraft certificates would be issued for the

purposes of: (1) enhancing aviation safety by ensuring that all light-sport aircraft operating in the future meet an acceptable standard, (2) facilitating sport and recreation operations, and (3) enhancing flight training and rental activities (excluding experimental light-sport aircraft).

In accordance with these requirements, this section of the proposal would impose an estimated one-time compliance cost of $13.9 million ($11.8 million, discounted), in 1999 dollars over the next 10 years, as shown in Table 1 of this evaluation. Based on several major assumptions, this one-time cost estimate of $13.9 million was derived in the following steps:

Step One - Estimation of the number of potentially affected existing light-sport aircraft.

As noted in the major assumptions section of this evaluation, each sport pilot affected by the proposed rule is expected to own or operate at least one light-sport aircraft. Therefore, as shown in Table 1, an estimated 9,000 light-sport aircraft owned or operated individuals who would be seeking an experimental airworthiness certificate (and a sport pilot certificate) between 2002 and 2003. In fact, about 6,000 and 3,000 of these existing light-sport aircraft owned or operated by sport pilots would be affected in 2002 and 2003, respectively. In addition, an estimated 1,000 existing light-sport aircraft, which would also need an experimental airworthiness certificate, are expected to be owned or operated by at least one pilot who would also be seeking a flight instructor certificate with a sport pilot rating, between 2002 and 2003. These existing light-sport aircraft owned or operated by flight instructors (with sport pilot ratings) would amount to an estimated 670 and 330 in years 2002 and 2003, respectively.

Table 1
Cost of Compliance Summary: Light-Sport Aircraft Certification (Part 21)

(1999 Dollars)

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J	Column K	Column L	Column M
Year	No. of Existing Sport Pilot/ Aircraft (AC) Impacted	No. of New Sport Pilot/ Aircraft Impacted	Airworthiness Inspection Costs for Existing Sport Pilot/ Aircraft	Airworthiness Inspection Costs for New Sport Pilot/ Aircraft	Airworthiness Certification Costs for New Sport Pilot/ Aircraft	Certification Costs for Existing and New Sport Pilot/ Aircraft, Subtotal	No. of Existing Flt. Instructor/ Aircraft Impacted	No. of New Flt. Instructor/ Aircraft Impacted	Airworthiness Inspection Costs for Existing Flt. Instructor/ Aircraft	Airworthiness Inspection Costs for New Flight Instructor/ Aircraft	Airworthiness Certification Costs for for New Flt. Instructor/ Aircraft	Certification Costs for Existing and New Flt. Instructor/ AC, Subtotal	Total Cost, Adj. Based on 80% Avg. Compliance By Current AC Mfrs.
			DAR=$300@AC	DAR=$500@AC	$3,500@AC				DAR=$300@AC	DAR=$500@AC	$3,500@AC		(Cols.C+D+I+J)+
			Cols. A x $300	Cols. B x $500	Cols. B x $3,500	Cols. C + D + E			Col. G x $300	Col. H x $500	Col. H x $3,500	Cols. I + J + K	((Col.E + K) x 20%)
2002	6,000	2,200	$1,800,000	$1,100,000	$7,700,000	$10,600,000	670	250	$201,000	$125,000	$875,000	$1,201,000	$4,941,000
2003	3,000	2,200	$900,000	$1,100,000	$7,700,000	$9,700,000	330	250	$99,000	$125,000	$875,000	$1,099,000	$3,939,000
2004		2,200		$1,100,000	$7,700,000	$8,800,000		250		$125,000	$875,000	$1,000,000	$2,940,000
2005		220		$110,000	$770,000	$880,000		25		$12,500	$87,500	$100,000	$294,000
2006		220		$110,000	$770,000	$880,000		25		$12,500	$87,500	$100,000	$294,000
2007		220		$110,000	$770,000	$880,000		25		$12,500	$87,500	$100,000	$294,000
2008		220		$110,000	$770,000	$880,000		25		$12,500	$87,500	$100,000	$294,000
2009		220		$110,000	$770,000	$880,000		25		$12,500	$87,500	$100,000	$294,000
2010		220		$110,000	$770,000	$880,000		25		$12,500	$87,500	$100,000	$294,000
2011		220		$110,000	$770,000	$880,000		25		$12,500	$87,500	$100,000	$294,000
Total	9,000	8,140	$2,700,000	$4,070,000	$28,490,000	$35,260,000	1,000	925	$300,000	$462,500	$3,237,500	$4,000,000	$13,878,000
Total, Present Value of Cost													$11,751,532

Source: U.S. Dept. of Trans., FAA, Office of Aviation Policy and Plans, Operations Regulatory Analysis Branch (APO-310), June 2001.

Step Two - Estimation of the number of potentially affected new Light-sport aircraft.

As already mentioned in the major assumptions section of this evaluation and shown in Table 1, an estimated 8,140 newly manufactured light-sport aircraft would be owned or operated by individuals seeking both airworthiness certificates that meet an industry-developed consensus airworthiness standard and a sport pilot certificate, with a sport rating, between 2002 and 2011. The FAA estimates that, about 2,200 of these aircraft would be affected annually between 2002 and 2004. From 2005 to 2011, the estimated number would be reduced to 220 light-sport aircraft annually. In addition, an estimated 925 new light-sport aircraft would be owned or operated by pilots seeking a flight instructor certificate with a sport pilot rating, between 2002 and 2003. Also, operators of newly built sport pilot aircraft would seek flight instructor certificates with sport pilot ratings. The numbers of these aircraft are estimated to be 250 annually from 2002 to 2004. From 2005 to 2011, this estimate would be reduced to 25 light-sport aircraft annually.

Step Three - Estimation of certification cost for each existing Light-sport aircraft by a Designated Airworthiness Representative (DAR).

The proposal would allow operators with existing light-sport aircraft to meet their aircraft certification requirements by having them inspected by a DAR. According to several industry sources, the average fee charged by a DAR for an existing light-sport aircraft (regardless of category) would be about $300.00 (an average of 6 hours inspection time x $45/hour by a DAR).

Step Four - Estimation of the certification cost for each newly produced light-sport aircraft by a DAR.

In accordance with the proposed rule, newly produced light-sport aircraft would have to go through a two-step airworthiness inspection and certification process before operators would be allowed to fly them. Under the first step of the process, manufacturers of new light-sport aircraft would be subject to stringent certification production standards. Last, after production and delivery of new light-sport aircraft, aircraft would be subject to an airworthiness inspection. This section of the certification cost assessment pertains only to the costs those light-sport

aircraft operators would incur as the result of an airworthiness inspection by a DAR. Based on the informed judgement of FAA technical personnel in the FAA's Office of Flight Standards, the average fee charged by a DAR inspector would be $500 (an average of 10 hours inspection time x $45/hour by a DAR). This fee would pertain to an inspection for a newly produced light-sport aircraft (regardless of category).

All of the cost estimates in this section have been rounded up to the nearest $100 level.

Step Five - Estimation of the certification cost of compliance adjustment.

According to several industry trade associations and light-sport aircraft manufacturers, about 80 percent all U.S. manufacturers of light-sport aircraft are, on average, in compliance with the proposed new aircraft certification requirements. This assessment is based on the belief that the new proposed light-sport aircraft certification standards would be similar to those used internationally. Such manufacturers are already in compliance with nearly all of those standards.

For this reason, any cost of compliance estimate derived for aircraft certification would be adjusted downward by 80 percent, as shown in column N in Table 1 of this evaluation. This assessment pertains only to those new light-sport aircraft that would be produced under the new design certification standards in future years (namely, from 2002 - 2011).

In an effort to obtain a cost of compliance estimate associated with meeting this new certification requirement, several light-sport aircraft manufacturers were contacted. Assuming they started from scratch to meet the new standards, several light-sport aircraft manufacturers indicated that their additional cost for each new light-sport aircraft would range from $2,500 to $4,500. This cost range is based on lots of uncertainty as to the types (simple vs. complex light-sport aircraft) and number of light-sport aircraft that would be sold in future years for particular designs (by various categories such as powered parachutes, trikes, fixed-wing types, etc.). Thus, the average certification cost for each light-sport aircraft produced under the new certification standards is estimated to be about $3,500.

Step Six - Estimation of the total certification cost for all potentially affected newly produced and existing light-sport aircraft.

The aircraft airworthiness inspection costs for existing light-sport aircraft is estimated to be $3.0 million over the next 2 years. Over the 10-year period, the total number of affected existing aircraft would amount to about 10,000.

The aircraft airworthiness inspection costs (about $5.0 million) and aircraft certification costs ($6.0 million) for newly produced light-sport aircraft is estimated to be $11.0 million over the next 10 years. From Table 1, the aircraft certification cost estimate of $6.0 million can be derived by adding cost totals for columns "E" and "K" and multiplying them by 20 percent, which is consistent with step six above. This cost estimate was calculated by multiplying it by the number of new light-sport aircraft that would be produced under new airworthiness certificates annually by the aircraft certification cost of about $3,500 per aircraft and summed over the 10-year period.

Over the 10-year period, the total number of affected newly produced aircraft would amount to about 9,065.

The total cost of compliance for aircraft certification would amount to an estimated $13.9 million ($11.8, discounted) over the next 10 years (2002 - 2011), as shown in Table 1 of this regulatory evaluation.

Annual Condition Inspection and Repairman Certificate Costs

This section of the proposal would amend 14 CFR part 91 by requiring that operators of light-sport aircraft have their aircraft inspected for maintenance compliance annually (commonly referred to in this evaluation as "Annual Condition Inspections"). A new repairman certificate would be established with ratings for individuals who would inspect and maintain light-sport aircraft. The cost of compliance associated with meeting this annual condition inspection requirement would amount to an estimated $16.7 million ($14.4 million,

discounted), in 1999 dollars over the next 10 years, as shown in Table 2 of this evaluation. The following steps illustrate how this cost estimate was derived:

Step One - Estimation of the number of potentially affected Light-sport aircraft operators for annual condition inspections.

As stated previously in the major assumptions section of this evaluation and shown in Table 2, the number of potentially affected operators would amount to an estimated 19,065 (Table 2, Columns A, C, and E: 17,155+959+951), over the next 10 years, based on information provided primarily by industry and FAA technical personnel in AFS. About 90 percent of these operators (17,155) would perform the annual condition inspection requirement on their own (for personal use only) aircraft as repairmen with an inspection rating. Another 5 percent of these operators (959) would perform the annual condition inspection requirement on their own aircraft and become repairmen with maintenance ratings.

The remaining 5 percent of the operators of 8,473 (Table 2, Column F) represent a cumulative count of 951 over 10 years who would elect to meet their annual condition inspection requirement by having their aircraft inspected by a certificated repairman with a maintenance rating.

Step Two - Estimation of repairman inspection cost per aircraft.

In accordance with the requirements of the proposal, operators could meet their annual condition inspection

Table 2
Cost of Compliance Summary - Repairman Certification (Part 65):
(1999 Dollars)

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J
	No. of Persons Seeking LSA* Repairman Certification for Personal Use (90%)	**Cost of LSA* Repairman Certification for Personal Use**	**No. of Persons Seeking LSA* Repairman Certification for Commercial Use (5%)**	**Cost of LSA* Repairman Certification for Commercial Use**	**No. of Persons Seeking LSA* Repairman to Perform Annual AC Repair Inspections (5%)**	**No. of Annual Condition Inspections for LSA* Owners**	**Cost of Annual Condition Inspections for LSA* Owners**	**Total Cost of Annual Condition Inspections and LSA* Repairman Certification**	**Present Value Factors**	**Present Value Total Cost of LSA* Repairman Certification**
Year	**@$720 (one-time)**	$720.00	**@$3,600 (one-time)**	$3,600.00	**@$100 (recurring)**		$100.00		**(7%, 10 yrs.)**	
	16*$45=$720					(Col. E Cumulative)	(Col. F x $100)	(Cols. B+D+G)		
2002	8,208	$5,909,760	456	$1,641,600	456	456	$45,600	$7,596,960	0.9346	$7,099,963
2003	5,202	$3,745,440	289	$1,040,400	289	745	$74,500	$4,860,340	0.8734	$4,245,209
2004	2,205	$1,587,600	123	$442,800	122	867	$86,700	$2,117,100	0.8163	$1,728,184
2005	220	$158,400	13	$46,800	12	879	$87,900	$293,100	0.7629	$223,605
2006	220	$158,400	13	$46,800	12	891	$89,100	$294,300	0.7130	$209,832
2007	220	$158,400	13	$46,800	12	903	$90,300	$295,500	0.6663	$196,904
2008	220	$158,400	13	$46,800	12	915	$91,500	$296,700	0.6227	$184,770
2009	220	$158,400	13	$46,800	12	927	$92,700	$297,900	0.5820	$173,381
2010	220	$158,400	13	$46,800	12	939	$93,900	$299,100	0.5439	$162,691
2011	220	$158,400	13	$46,800	12	951	$95,100	$300,300	0.5083	$152,657
Total	**17,155**	**$12,351,600**	**959**	**$3,452,400**	**951**	**8,473**	**$847,300**	**$16,651,300**		**$14,377,195**

Source: U.S. Dept. of Trans., FAA, APO-310, March 2001.
* Represents Light-Sport Aircraft (LSA)

needs by electing to do it themselves or pay a certificated repairman with a maintenance rating to perform such work.[4]
Those individuals who choose to comply with the proposal by performing the needed annual condition inspections on their own aircraft could do so by successfully completing an FAA accepted training course of 16 hours. An FAA instructor would charge, on average, $45.00 per hour to conduct the needed repairmen (inspection) training for personal use. The one-time cost of this training course is estimated to be about $720.00 (16 x $45.00) per light-sport aircraft operator. About 90 percent of the potentially affected operators are expected to adopt this option.

Individuals who wish to comply with the proposal by performing the needed annual condition inspections on their own aircraft and become certificated to perform annual condition inspections for the public could do so by successfully completing an FAA accepted training course of 80 hours. An FAA instructor is estimated to charge $45.00 per hour to conduct the needed repairmen (inspection) training for personal and commercial uses. The one-time cost of this training course is estimated to be about $3,600.00 (80 x $45.00) per light-sport aircraft operator. About 5 percent of the potentially affected operators are expected to adopt this option.

This evaluation estimates that about 5 percent of the remaining operators would meet the annual condition inspection for their aircraft by having a certificated repairman with maintenance rating perform it. Individuals in high-income occupations would elect to pay a maintenance repairman an average flat annual maintenance inspection fee estimated to be $100.00 (average). Since these operators would pay this fee annually over the next 10 years, the number of operators (8,473 = number of inspections) potentially affected would be determined by counting them cumulatively, as shown in Table 2 of this evaluation.

Step Three - Estimation of total cost for repairmen

[4] This section of the evaluation assumes that those operators who become a repairman would only incur the one-time costs of obtaining repairman certificates. Once sport pilots become repairmen (inspection or maintenance), they can meet the annual condition inspection requirements by working on their own light-sport aircraft at no additional costs. Those operators who do not become repairmen must pay certificated maintenance repairmen $100 each year to meet their annual condition inspection requirements.

certification and certificated repairman services.

For those operators who would perform their own annual condition inspections, the proposal would impose a compliance cost of approximately $12.0 million (17,155 x $720). This option represents about 90 percent of all potentially affected operators. Among those operators who wish to perform their own annual condition inspections and similar commercial work for others would amount to an estimated $3.0 million (959 x $3,600). This option also represents about 5 percent of all potentially affected operators. The remaining 5 percent of the operators would elect to meet their annual condition inspection needs by having such work performed by a certificated repairman with maintenance rating. This option would amount to an estimated $1.0 million (8,473 x $100).

Sport Pilot Certificate and Flight Instructor Certificate (with a sport pilot rating) costs

This proposal would amend 14 CFR part 61 by requiring that operators of light-sport aircraft obtain at least a sport pilot certificate and by requiring that operators who instruct sport pilots obtain a flight instructor certificate with a sport pilot rating. The proposed rule would impose an estimated compliance cost of $9.8 million ($7.8 million, discounted) over the next 10 years. The estimated compliance cost is divided into the cost for existing and the cost of future sport pilots and flight instructors certificates.

The cost estimate for existing sport pilots and flight instructors certificates was derived by multiplying the number of potentially impacted sport pilots (9,000), with existing light-sport aircraft, by the cost of obtaining a sport pilot certificate (which ranges between $150 and $750, depending on the amount of credit given for flight

experience by the FAA). A similar cost assessment was made for the number of potentially impacted flight instructors (1,000) with existing light-sport aircraft. The illustrative manner by which this cost estimate was derived is shown below in Table 3A. Flight reviews are proposed to be required every two years. The numbers in column C of Table 3A are obtained by multiplying columns A and B by $150 and $750, respectively. A similar procedure produces the numbers in column H (some numbers do not multiply out exactly due to rounding).

Table 3A

Cost of Compliance Summary: Proposed Rule (Part 61) for Existing Sport Pilots (SP) and Flight Instructors (FI)

(1999 Dollars)

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J	Column K
Year	No. of Existing Individuals Seeking SP Certificates (SP Cert. - Credit for Experience)	No. of Existing Individuals Seeking SP Certificates (SP Cert. - w/o Credit for Expr.)	Cost of SP Certificate for Existing Individuals	Biennial Flight Review (BFR)[1]	No. of Existing Pilots Seeking FI Certificates (FI Cert. - Credit for Experience)	No. of Existing Instructors Seeking LSA Pilot Certs. (FI Cert. W/O Credit for Experience)	Cost of FI Certificate for Existing Pilots	Cost for Biennial Renewal of Flt. Instructor Certificates[1]	Total Cost	Present Value Factors	Total Cost, PV
	$150@ SP Cert. Holder	SP Cert @$750	(Col. A x $150) + (Cols. B x $750)	BFR@ $50 (Cols. A + B) * $50	LSA Cert @$250	LSA Cert @$1,400	(Col. E x $250) + (Col. F x $1,400)	@ $75 (Cols. E + F) * $75	(Cols. C+D+G+H)	7%, 10 yrs.	(Cols I x J)
2002	4,500	1,500	$1,800,000	$0	503	168	$360,125	$0	$2,160,125	0.9346	$2,018,808
2003	2,250	750	$900,000	$0	248	82	$176,675	$0	$1,076,675	0.8734	$940,410
2004			$0	$300,000			$0	$50,250	$350,250	0.8163	$285,908
2005			$0	$150,000			$0	$24,750	$174,750	0.7629	$133,316
2006			$0	$300,000			$0	$50,250	$350,250	0.7130	$249,723
2007			$0	$150,000			$0	$24,750	$174,750	0.6663	$116,443
2008			$0	$300,000			$0	$50,250	$350,250	0.6227	$218,118
2009			$0	$150,000			$0	$24,750	$174,750	0.5820	$101,706
2010			$0	$300,000			$0	$50,250	$350,250	0.5439	$190,513
2011			$0	$150,000			$0	$24,750	$174,750	0.5083	$88,834
Total	**6,750**	**2,250**	**$2,700,000**	**$1,800,000**	**750**	**250**	**$536,800**	**$300,000**	**$5,336,800**		**$4,343,780**

Source: U.S. Dept. of Trans., FAA, APO-310, April 2001.

[1] This column also includes biennial costs for newly produced active light-sport aircraft that are expected to come into service (in varying numbers) between 2002 and 2011.

The cost estimate for future sport pilots and flight instructors certificates was derived by multiplying the number of potentially impacted sport pilots (8,140) by the cost of obtaining a sport pilot certificate (which ranges between $150 and $750, depending on the amount of credit given for flight experience by the FAA). A similar cost assessment was made for the number of potentially impacted flight instructors (925). The illustrative manner by which this cost estimate was derived is shown below in Table 3B. Flight reviews are proposed to be required every two years. The numbers in column C of Table 3B are obtained by multiplying columns A and by $150 and $750, respectively. A similar procedure produces the numbers in column H (some numbers do not multiply out exactly due to rounding).

Table 3B

Cost of Compliance Summary: Proposed Rule (Part 61) for New Sport Pilots (SP) and Flight Instructors (FI)

(1999 Dollars)

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J	Column K
Year	No. of Individuals Seeking SP Certificates (SP Cert. - Credit for Experience)	No. of Individuals Seeking SP Certificates (SP Cert. - Without Credit for Expr.)	Cost of SP Certificate for Individuals	Biennial Flight Review (BFR)	No. of Pilots Seeking FI Certificates (FI Cert. - Credit for Experience)	No. of Instructors Seeking LSA Pilot Certs. (FI Cert. W/O Credit for Experience)	Cost of FI Certificate for Pilots	Cost for Biennial Renewal of Flt. Instructor Certificates	Total Cost	Present Value Factors	Total Cost, PV
	$150@ SP Cert. Holder	SP Cert.@$750	(Col. A x $150) +	BFR@ $50	$250@ FI Cert. Holder	$1,400@ FI Cert. Holder	(Col. E x $250) +	@ $75	(Cols. C+D+G+H)	7%, 10 yrs	(Cols I x J)
			(Cols. B x $750)				(Col. F x $1,400)				
2002	1,650	550	$660,000	$0	188	63	$134,375	$0	$794,375	0.9346	$742,407
2003	1,650	550	$660,000	$0	188	63	$134,375	$0	$794,375	0.8734	$693,838
2004	1,650	550	$660,000	$110,000	188	63	$134,375	$18,750	$923,125	0.8163	$753,545
2005	165	55	$66,000	$110,000	19	6	$13,438	$18,750	$208,188	0.7629	$158,825
2006	165	55	$66,000	$220,000	19	6	$13,438	$37,500	$336,938	0.7130	$240,232
2007	165	55	$66,000	$121,000	19	6	$13,438	$20,625	$221,063	0.6663	$147,303
2008	165	55	$66,000	$231,000	19	6	$13,438	$39,375	$349,813	0.6227	$217,846
2009	165	55	$66,000	$132,000	19	6	$13,438	$22,500	$233,938	0.5820	$136,154
2010	165	55	$66,000	$242,000	19	6	$13,438	$41,250	$362,688	0.5439	$197,278
2011	165	55	$66,000	$143,000	19	6	$13,438	$24,375	$246,813	0.5083	$125,467
Total	**6,105**	**2,035**	**$2,442,000**	**$1,309,000**	**694**	**231**	**$497,188**	**$223,125**	**$4,471,313**		**$3,412,894**

Source: U.S. Dept. of Trans., FAA, APO-310, May 2001.

While the FAA considers the assessment of the potential cost of compliance of the proposal to be reasonable, some uncertainty remains for some critical parameters. Some of those critical parameters with uncertainty are as follows:

1. The number of existing and new light-sport pilots (with sport pilot ratings) affected,
2. The number of sport pilots who would become a repairman (maintenance and inspection) of light-sport aircraft over the next 10 years,
3. The number of delivered new light-sport aircraft (by category such as fixed-wing, powered parachutes, trikes, etc.) over the next 10 years,
4. The estimated certification cost (average) of $3,500 for each newly produced light-sport aircraft,
5. The average amount of time (about 6 hours) needed to conduct an airworthiness inspection for each existing experimental light-sport aircraft,
6. The average amount of time (about 10 hours) needed to conduct an airworthiness inspection for a newly produced special or experimental kit-built light-sport aircraft, and,
7. The number of existing experimental light-sport aircraft and the number of new and existing flight instructors (with sport pilot ratings), over the next 10 years.

As the result of this uncertainty, the FAA solicits comments from the general aviation community and the recreational light-sport aircraft industry in particular. All commenters are asked to provide documented information in support of their comments.

C. Analysis of Benefits

The estimated benefits of avoiding the accidents involving light-sport

aircraft that are listed in Appendixes A and B are $221.4 million ($153.3 million, discounted). The estimated benefits are based only on the avoidance of fatalities in these accidents. Injuries and property loss were not included in this analysis due to lack of information. The FAA believes that the benefits from avoided injuries and property are small in comparison to the benefits of avoided fatalities. According to FAA and Aviation Rulemaking Advisory Committee (ARAC) technical personnel, the benefits of avoiding the fatalities due to these accidents would be achieved, in part, by requiring airworthiness certificates for light-sport aircraft, and pilot certificates (sport pilot and flight instructor with a sport pilot rating) for those who wish to fly light-sport aircraft.[5]

The monetary estimate of $221.4 million ($153.3 million, discounted) for potential safety benefits is based on accident information obtained from several sources. One major accident data source was the National Transportation Safety Board (NTSB) database on aviation accidents. Accident data from the NTSB, covering the period from 1988 to 1998, are listed in Appendix A. However, the NTSB focuses primarily on aircraft and generally does not collect accident data or

[5] In addition to the safety benefit, there would be a benefit gained from "Consumer Surplus." This additional benefit is derived from the recreational value gained from this activity as a result of this proposal, which would allow the carriage of a passenger and operation of a light sport aircraft for sport and recreational purposes. If the derived (net) recreational value is $25 per recreational day and a sport pilot conducted 20 days of recreational flying annually, a sport pilot would obtain $500 in net annual recreational benefits. The FAA estimates that 9000 pilots will seek a sport pilot certificate, providing an additional estimated benefit of recreational value gained of $4.5 million annually. The FAA solicits comments regarding the recreational values established from the general aviation community and the recreational light-sport aircraft industry in particular. The FAA will use those comments to further evaluate "Consumer Surplus" benefit.

investigate accidents involving fat ultralight vehicles because they are non-registered aircraft. For this reason, accident data were obtained from additional sources. The additional accident data sources include the three organizations that conduct training in two-place fat ultralights under an exemption from part 103. The FAA sometimes requires exemption holders to collect specific data while operating under an exemption. The FAA may decide that it should initiate rulemaking to address provisions under an exemption. If so, this data may be used to justify and support such an action. The FAA began gathering data on part 103 training accidents and incidents in 1995 when it issued the first exemption from part 103 for training. The three training exemption holders are Aero Sport Connection (ASC), Experimental Aircraft Association (EAA), and the U.S. Ultralight Association (USUA). The part 103 training exemption requires the three exemption holders to report to the FAA accidents that involve vehicles operated under that exemption. Accident data from the three exemption holders, covering the period between 1995 and 2001, are listed in Appendix B. The accident data were crossed referenced to ensure that the accidents were not counted multiple times.

A review of the information from all these data sources revealed that there were 41 accidents between 1995 and 2001 that involved fat ultralight vehicles and light-sport aircraft. These accidents were determined to be relevant based on conversations with several industry representatives, and the relevancy determination focused on two essential factors. First, only those aircraft that fall within the

proposed definition of light-sport aircraft were considered. Second, only those accidents that either could have been prevented or whose likelihood of occurrence could have been significantly reduced were considered. For example, in instances where enhanced training and/or required safety standards could have reduced accidents, these types of accidents were considered relevant.

A review of the 1995-2001 data showed that there were 51 fatalities in accidents involving aircraft that would be defined by this rule as light-sport aircraft, as shown in Appendix C. During that 6-year period there were roughly 8 or 9 fatalities a year. At that rate, there would be 85 fatalities during the next 10 years.

In this analysis, the FAA estimates that a total of 82 fatalities could potentially be avoided by adopting the proposed rule. The FAA assumed that there could only be five fatalities potentially avoided during the first year because not all light-sport aircraft operators could comply with all of the proposed requirements during the first year after the proposed rule was issued. If the value of a fatality avoided is $2.7 million, then the 10-year potential benefit of the proposed rule would be $221.4 million ($153.3 million, discounted), as shown in Table 4.

Table 4
Safety Benefits Summary
(1999 Dollars)

Year	Fatalities	Benefit of Avoided Fatalities @ $2,700,000	Present Value Factors (7%, 10 yrs.)	Present Value of Benefits
2002	5	$13,500,000	0.9346	$12,616,822
2003	9	$24,300,000	0.8734	$21,224,561
2004	8	$21,600,000	0.8163	$17,632,034
2005	9	$24,300,000	0.7629	$18,538,354
2006	8	$21,600,000	0.7130	$15,400,501
2007	9	$24,300,000	0.6663	$16,192,116
2008	8	$21,600,000	0.6227	$13,451,394
2009	9	$24,300,000	0.5820	$14,142,821
2010	8	$21,600,000	0.5439	$11,748,969
2011	9	$24,300,000	0.5083	$12,352,888
Total	82	$221,400,000		$153,300,461

Source: U.S. Dept. of Trans., FAA, APO-310, September 2001.

The assessment of potential safety benefits is subject to the following uncertainties:

- Accuracy as to the actual number light-sport aircraft accidents contained in the NTSB's historical record for primarily U.S.-registered aircraft. There is uncertainty as to what extent the NTSB's database has fully captured those accidents involving unregistered light-sport aircraft over the past 10 years. Thus, the potential safety benefits estimate for light-sport aircraft may be understated.

- Accuracy as to the actual number of light-sport aircraft accidents contained in the historical records of the three organizations that hold a training exemption to train in two-place fat ultralights. There is uncertainty as to what extent these exemption holders' databases have fully captured those accidents for unregistered light-sport aircraft over the past 10 years. Thus, the potential safety benefits estimate for light-sport aircraft may be understated.

In view of this uncertainty, the FAA solicits comments from the general aviation community and the recreational light-sport aircraft industry in particular. All commenters are asked to provide documented information in support of their comments.

D. Benefit-Cost Comparison

The proposed rule costs much less than the estimated potential benefits. The estimated cost of the proposed rule is $40.4 million ($34.0 million, discounted). The estimated potential benefits of avoiding 82 fatalities are $221.4 million ($153.3 million, discounted). The estimated benefits are based only on the avoidance of fatalities in these accidents. The FAA believes that some of the identified benefits may not be achieved. However, if the proposed rule is 23 percent effective, or more, then the rule would be cost-beneficial.

V. ANALYSIS OF ALTERNATIVES

Status Quo Alternative

When analyzing alternatives to any proposed regulatory action, the status quo is typically analyzed with other alternatives. However, this is not the case for this evaluation. The status quo represents a situation in which the FAA would issue training exemptions from part 103 indefinitely. This would perpetuate "rulemaking by exemption,"

which does not qualify as a viable alternative. The FAA issued exemptions for flight training in 1995 after the initiation of this rulemaking project. The FAA issued the exemptions under the assumption that they would soon be superceded by rulemaking.

Alternative One - Strictly Enforce Current Regulations

Under this option, the FAA would rescind the three existing exemptions from part 103 that allow training in two-place fat ultralight vehicles. Rescinding the existing exemption would be necessary because it is DOT and FAA policy to issue exemptions only to those with unique situations, usually for a limited time. The FAA does not intend to issue exemptions to address situations of a general nature. In that case, the FAA initiates rulemaking.

Anyone who wanted to learn to fly an ultralight could not receive any flight training in a two-place fat ultralight before soloing because those ultralights do not meet part 103. Future two-place fat ultralights would have to be certificated in the primary or standard category to be used for flight training or rental. The design standards for these airworthiness certificates may not be appropriate for many of the fat ultralights in the ultralight community.

Some existing or new fat ultralights would be eligible for an experimental airworthiness certificate. In this case, the operator of the aircraft would be responsible for building a majority of the

aircraft and these aircraft would not be eligible for flight training or rental.

Costs

1. Significant costs for private pilot certificates and flight instructor certificates for existing fat ultralights. The FAA estimates the cost to operators of existing fat ultralights to obtain a private pilot certificate ($3,800 @ certificate) and flight instructor certificate ($7,500 @ certificate) to be $45.9 million ($40.9 million, discounted) over 10 years. This amount is based on the cost to obtain a certificate multiplied by the number of existing operators.

Table 5

Costs for Private Pilot Certificates and Flight Instructor Certificates for Existing Fat Ultralights

(1999 Dollars)

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I
Year	**No. of Individuals Seeking Pvt Pilot Certificate (W/O FAA Exemptions)**	**One-time Cost of Pvt Pilot Certificate**	**Biennial Flight Review (BFR)[1] @ $100**	**No. of Individuals Seeking CFI Certificate (W/O FAA Exemptions)**	**One-time Cost of CFI Cert.**	**Cost for Biennial Renewal of CFI Cert. for Flt. Instructors @ $150**	**Total Cost**	**Present Value Factors**	**Total Cost, PV**
	Cert.@$3,800	(Col. A x $3,800)	(Col. A * $100)	Cert.@$7,500	(Col. D x $7,500)	(Col. D * $150)	(Cols. B +C+E+F)	**7%, 10 yrs.**	(Cols.G x H)
2002	6,000	$22,800,000	$0	670	$5,025,000	$0	$27,825,000	0.9346	$26,004,673
2003	3,000	$11,400,000	$0	330	$2,475,000	$0	$13,875,000	0.8734	$12,118,962
2004			$600,000			$100,500	$700,500	0.8163	$571,817
2005			$300,000			$49,500	$349,500	0.7629	$266,632
2006			$600,000			$100,500	$700,500	0.7130	$499,447
2007			$300,000			$49,500	$349,500	0.6663	$232,887
2008			$600,000			$100,500	$700,500	0.6227	$436,236
2009			$300,000			$49,500	$349,500	0.5820	$203,412
2010			$600,000			$100,500	$700,500	0.5439	$381,026
2011			$300,000			$49,500	$349,500	0.5083	$177,668
Total	**9,000**	**$34,200,000**	**$3,600,000**	**1,000**	**$7,500,000**	**$600,000**	**$45,900,000**		**$40,892,759**

Source: U.S. Dept. of Trans., FAA, APO-310, April 2001.

[1] This column also includes biennial costs for newly produced active light-sport aircraft that are expected to come into service (in varying numbers) between 2002 and 2011.

2. Significant costs for private pilot certificates and flight instructor certificates for future fat ultralights. Under this alternative, the costs of obtaining a pilot certificate or an instructor certificate would be much higher than under the proposed rule. The FAA believes that if this alternative is adopted, the number of new pilots would be much less than would be the case with the proposed rule. This reduction in the number of new pilots is reflected in columns A and D in Table 6 below. The FAA estimates the cost to operators of future fat ultralights to obtain private pilot certificates ($3,800 @ certificate) and flight instructor certificates ($7,500 @ certificate) to be $33.4 million ($27.0 million, discounted) over 10 years. This amount is based on the cost to obtain a certificate multiplied by the estimated number of future operators.

Table 6

Costs for Private Pilot Certificates and Flight Intructor Certificates for Future Fat Ultralights

(1999 Dollars)

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I
Year	**No. of Individuals Seeking Private Pilot Certificates**	**Cost of Private Pilot Certificate for Individuals**	**Biennial Flight Review (BFR)**	**No. of Pilots Seeking CFI Certificates**	**Cost of CFI Certificate for Pilots**	**Cost for Biennial Renewal of CFI Certificates**	**Total Cost**	**Present Value Factors**	**Total Cost, PV**
	Cert.@$3,800	(Col. A x $3,800)	BFR@ $100	Cert.@$7,500	(Col. D x $7,500)	@ $150	(Cols. B +C+E+F)	7%, 10 yrs.	(Cols.G x H)
2002	1,760	$6,688,000	$0	200	$1,500,000	$0	$8,188,000	0.9346	$7,652,336
2003	1,760	$6,688,000	$0	200	$1,500,000	$0	$8,188,000	0.8734	$7,151,716
2004	1,760	$6,688,000	$220,000	200	$1,500,000	$37,500	$8,445,500	0.8163	$6,894,044
2005	176	$668,800	$220,000	20	$150,000	$37,500	$1,076,300	0.7629	$821,104
2006	176	$668,800	$440,000	20	$150,000	$75,000	$1,333,800	0.7130	$950,981
2007	176	$668,800	$242,000	20	$150,000	$41,250	$1,102,050	0.6663	$734,342
2008	176	$668,800	$462,000	20	$150,000	$78,750	$1,359,550	0.6227	$846,659
2009	176	$668,800	$264,000	20	$150,000	$45,000	$1,127,800	0.5820	$656,390
2010	176	$668,800	$484,000	20	$150,000	$82,500	$1,385,300	0.5439	$753,511
2011	176	$668,800	$286,000	20	$150,000	$48,750	$1,153,550	0.5083	$586,406
Total	**6,512**	**$24,745,600**	**$2,618,000**	**740**	**$5,550,000**	**$446,250**	**$33,359,850**		**$27,047,491**

Source: U.S. Dept. of Trans., FAA, APO-310, May 2001.

3. Significant aircraft certification costs to manufacturers[6].

Aircraft manufacturers can expect to incur costs to obtain airworthiness certificates for the fat ultralights they manufacture. Based on information received from several industry sources, under strict enforcement of the current rules, the cost of aircraft certification would be higher than under the proposed rule. Only newly produced fat ultralights would be eligible to receive a primary or standard category airworthiness certificate (existing fat ultralights were not manufactured under a production certificate and, therefore, would not be eligible for this type of airworthiness certificate). Primary and standard category airworthiness certificates allow the operator to conduct flight training and rental activities. For those fat ultralights that would meet such standards, the potential cost of compliance is estimated to be as low as $4,800 per fat ultralight for a primary airworthiness certificate, or as high as $6,400 per fat ultralight for a standard airworthiness certificate. Those fat ultralights that do not meet the standards for primary or standards category airworthiness certificates could be eligible for an experimental airworthiness certificate. The potential cost of compliance for an experimental airworthiness certificate is estimated as $750 per fat ultralight. The FAA estimated the cost of aircraft certification under this alternative to be $6.9 million ($5.7 million, discounted) by assuming that each new pilot or flight instructor would purchase a new aircraft during the same year the pilot received his/her pilot certificate or his/her flight instructor certificate. The new aircraft would be certificated as either an experimental aircraft or a primary aircraft. In this analysis, the FAA assumed that 95 percent of the new pilots and flight instructors would purchase an experimental aircraft and only five percent of them would purchase a primary aircraft. In this case the weighted average certification cost would be $952.50 per new aircraft. This is shown in Table 7 below. Aircraft certification costs would be underestimated if a higher percentage of new aircraft are certificated as primary aircraft rather than experimental aircraft. Some new pilots may also choose to purchase new aircraft that received a standard airworthiness certificate. To the extent that this happens the aircraft certification costs would also be underestimated.

[6] This alternative does not provide a method for aircraft certification of powered parachutes. They can not be certificated under experimental amateur-built, primary, or standard category. Additionally, weight-shift-control aircraft can not be certificated under standard or primary category.

Table 7
Aircraft Certification Costs
(1999 Dollars)

	Column A	Column B	Column C	Column D	Column E
Year	No. of Individuals Seeking Private Pilot Certificates	No. of Pilots Seeking CFI Certificates	Cost of Certifying New Private Pilots and CFI Flight Instructors	Present Value Factors	Total Cost, PV
			$952.5@ new pilot	7%, 10 yrs.	
2002	1,760	200	$1,866,900	0.9346	$1,744,766
2003	1,760	200	$1,866,900	0.8734	$1,630,623
2004	1,760	200	$1,866,900	0.8163	$1,523,947
2005	176	20	$186,690	0.7629	$142,425
2006	176	20	$186,690	0.7130	$133,107
2007	176	20	$186,690	0.6663	$124,399
2008	176	20	$186,690	0.6227	$116,261
2009	176	20	$186,690	0.5820	$108,655
2010	176	20	$186,690	0.5439	$101,547
2011	176	20	$186,690	0.5083	$94,904
Total	**6,512**	**740**	**$6,907,530**		**$5,720,634**

Source: U.S. Dept. of Trans., FAA, APO-310, May 2001.
Weighted average of experimental and primary certification cost (95 % x $750 + 5% x $4800).

4. Increased FAA Costs. The FAA did not estimate the increased cost to the FAA of strictly enforcing current regulations. The FAA would either have to hire new inspectors or shift inspectors away from other enforcement activities (e.g., air carrier operations) to enforce the current regulations on ultralight activities.

Since the cost of this alternative is at least $86.2 million ($73.6 million, discounted) and is more expensive than the proposed rule, alternative 1 (strictly enforcing the current rules) must be much more effective (greater than 47 percent)[7] than the proposed rule (23 percent) in order to be cost beneficial.

[7] Assuming immediate strict enforcement for current rules would allow all 83 future fatalities to be potentially avoided. Estimated benefits in this case would be $224.1 million ($157.2 million, discounted).

Alternative 2 - Proposed Rule (Preferred)

Under this preferred alternative, the FAA would establish unique requirements for the certification, operation, and maintenance of light-sport aircraft, including powered parachutes and weight-shift-control aircraft. Anyone operating fat ultralights (single-place or 2-place types) would be required to obtain at least a sport pilot certificate. Flight instructors would obtain a sport pilot rating. This alternative would eliminate the need for training exemptions from part 103 and would also establish requirements for private pilots to operate powered parachutes and weight-shift-control aircraft. Under this alternative, the FAA would also establish a new repairman certificate with ratings for individuals who would inspect and maintain light-sport aircraft.

As discussed earlier, the potential benefits from this alternative are estimated to be $221.4 million ($153.3 million, discounted). The FAA believes that many of these benefits could be achieved by requiring:

1. All operators of fat ultralights to obtain sport pilot or flight instructor (with a sport pilot rating) certificates. Accidents would be reduced as a result of required training for all pilots operating light-sport aircraft. The FAA believes that training and testing, appropriate to the type of operation conducted, reduces aircraft accidents.

2. All sport pilots to receive training tailored to specific make/model light-sport aircraft and sport and recreational operations. Due to the unique characteristics of each make/model of light-sport aircraft within the same category, this training is necessary to gain the skills necessary to operate those aircraft.

   In addition, a sport pilot could choose to add privileges, as

needed, with appropriate training. This would reduce accidents or incidents by limiting the privileges and would allow a sport pilot to gain the skills necessary to operate in a simple operating environment and build experience. This building block approach would allow a sport pilot to gain additional skills through additional training (e.g. operations in Class D, C, or B airspace), when the pilot wants to add more privileges.

3. All aircraft to meet the needed certification requirements. Accidents would be reduced because light-sport aircraft would be manufactured to a standard. In addition, these aircraft would be inspected by the FAA or a representative to ensure they are safe to fly before the issuance of an airworthiness certificate. Standard materials and processes would be used to build these aircraft.

4. All aircraft to meet the needed aircraft maintenance requirements. Accidents would be reduced because required maintenance done in regular intervals by certificated repairman or mechanics would ensure that light-sport aircraft are maintained properly.

5. Training for repairmen. Establishing maintenance standards and repairman training standards means well-maintained, safer aircraft. The aircraft would be maintained and inspected by individuals who would be trained by manufacturers or industry organizations on these unique types of light-sport aircraft. Repairmen would be trained on specific make and model light-sport aircraft.

The benefits listed in items 2 and 5 above are unique to the proposed rule alternative (preferred). Those two benefits would not be achieved by strictly enforcing current regulations. Benefits in items 1, 3, and 4 above would be achieved under either alternative.

As stated earlier, these proposed requirements are estimated to cost $40.4 million ($34.0 million, discounted). If the proposed rule were only 23 percent effective, the proposed rule would be cost beneficial.

Other Benefits

In addition to the quantifiable potential benefits of $221.4 million ($153.3 million, discounted), there are other benefits of the proposed rule that would help enhance aviation safety for sport pilots. Such benefits include, but are not limited to, the following:

- Certificated pilots routinely receive notices of FAA safety programs and are eligible to participate in that supplemental training; current operators of fat ultralights do not receive these notices.

- Certificated pilots are required to receive all Notices to Airmen (NOTAMs), informing them of safety-and security-related information which could impact a flight and potentially reduce accidents; current operators of fat ultralights do not receive these NOTAMS.

- Certificated pilots are required when not operating in vicinity of an airport to receive weather briefings and therefore be better prepared to avoid bad weather; current operators of fat ultralights are not required to receive weather briefings.

- Safety-of-flight bulletins, similar to airworthiness directives (AD's) and service bulletins, would be issued for certificated light-sport aircraft as part of the FAA's safety monitoring system. There are no safety-of-flight bulletins currently being issued to operators of fat ultralights.

- Certificated light-sport aircraft repairmen would receive FAA's aircraft-specific safety and training information targeted to these repairmen needs. Currently no aircraft repairman receives any safety and training information targeted to fat ultralights.

- Certificated repairmen would be trained on how to report faults or failures to the FAA and light-sport aircraft manufacturers, similar to what is used for certificated aircraft. This would greatly improve how light-sport aircraft manufacturers correct faults and make a safer product.

The FAA selected this alternative primarily because, not only is the proposed rule less costly than the current rule, it likely would

provide a higher level of safety because of the additional two unique safety benefits. In addition, this alternative would fulfill the FAA's responsibility under 49 U.S.C. 44701, which requires the FAA to promote safe flight of civil aircraft and establish regulations covering aircraft operations.

VI. INITIAL REGULATORY FLEXIBILITY DETERMINATION

The Regulatory Flexibility Act of 1980 (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To achieve that principle, the Act requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide-range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis as described in the Act. However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the Act

provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

There are two types of small commercial entities that would be potentially affected by the proposal[8]: (1) Flight instructors with a sport pilot rating and (2) Certificated repairmen (maintenance). These entities are considered small. Since there is no established size criterion for these types of operators, all of them (flight instructors and maintenance repairmen) are considered to be small, from a worst case standpoint. Each of these small entities is discussed below:

Flight Instructors with a Sport Pilot Rating

Of the 10,000 existing operators of fat ultralight vehicles that would be affected by the proposal between 2002 and 2003, an estimated 1,000 (or 10 percent) would become flight instructors with a sport pilot rating. An estimated 925 additional new flight instructors, with a sport pilot rating, are expected to enter the industry between 2002 and 2011, as part of those newly produced light-sport aircraft.

[8] Light-sport aircraft manufacturers were not examined in this section of the evaluation for two reasons: (1) A substantial number of light-sport aircraft manufacturers are not expected to be significantly affected by the proposal because 80 percent of them would already be in compliance and (2) there is extremely limited data available on the number of light-sport aircraft manufacturers and their related financial data.

While a small number of new flight instructors with a sport pilot rating would teach part-time for the love of flying, the vast majority (about 75 - 90 percent) of them likely would be compensated beyond coverage of their operating expenses. These individuals would either be self-employed independent flight instructors for hire, who operate and own flight schools, or they would be employed as flight instructors at flight schools. In most cases, the FAA believes these individuals operate as self-employed independent flight instructors. All of these flight instructors are considered small commercial entities. The proposal would impose, at most, an annualized cost of compliance of $274 on each of the potentially affected flight instructors over the next 10 years[9]. While no financial data is available for these entities, due to their small size and the nature of their general aviation operations (i.e., many of them have yet to start operating as small entities), the magnitude of the potential compliance cost impact is not considered to be significant.

Repairmen (Maintenance)

The proposal would potentially affect an estimated 19,065 light-sport aircraft operators seeking either a sport pilot certificate or a flight instructor certificate with a sport pilot rating, over the next 10 years. For those reasons noted previously in the major assumptions section of this evaluation, an estimated 5 percent of these operators

[9] $1,400 (Cost of obtaining a flight instruction certificate for light-sport aircraft) x 0.14238 (capital recovery factor for 10 years at 7 percent) + $75 (biennial renewal of flight instructor certificate.

are expected to obtain repairman certificates to perform aircraft maintenance on training and rental aircraft. These light sport-aircraft repairmen (maintenance) would operate as independent small commercial entities or as employees for small fixed base operators.

The proposal would impose an annualized cost of compliance of about $513 on each of the potentially affected repairmen over the next 10 years.[10] For the same reasons stated previously for flight instructors, no financial data are available for these entities. Nonetheless, the magnitude of the potential compliance cost impact is not considered significant.

In view of the above discussion, the FAA certifies that the proposal would not have a significant economic impact on a substantial number of small entities operating either as light-sport aircraft repairmen (maintenance) or flight instructors with a sport pilot rating.

VII. INTERNATIONAL TRADE IMPACT STATEMENT

The Trade Agreement Act of 1979 prohibits Federal agencies from engaging in any standards or related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of

[10] $3,600 (cost of obtaining a repairman certificate covering light-sport aircraft for commercial use) x 0.14238 (capital recovery factor for 10 years at 7 percent).

international standards and, where appropriate, that they be the basis for U.S. standards. This effort includes both barriers affecting the export of American goods and services to foreign countries and barriers affecting the import of foreign goods and services into the United States.

In accordance with the above statute, the FAA has assessed the potential effect of the proposal and has determined that it would not present a significant impediment to either U.S. firms doing business aboard or foreign firms doing business in the United States. The proposal, if adopted as a rule, is expected to stimulate a great deal of growth for the light-sport aircraft aviation industry in the United States and abroad. The belief that no significant trade disadvantage would take place is based on the premise that the number of the requirements contained in the proposal (namely, aircraft certification standards) essentially mirrors those that already exist internationally.

VIII. INITIAL UNFUNDED MANDATES ASSESSMENT

The Unfunded Mandates Reform Act of 1995 (the Act), enacted as Pub. L. 104-4 on March 22, 1995, is intended, among other things, to curb the practice of imposing unfunded Federal mandates on State, local, and tribal governments.

Title II of the Act requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in a $100 million or more expenditure (adjusted annually for inflation) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action."

Since the highest annual cost of compliance would be about $15.5 million, the proposal does not contain such a mandate. Therefore, the requirements of Title II of the Unfunded Mandates Reform Act of 1995 do not apply.

APPENDIX A

SUMMARY OF NTSB HISTORICAL ACCIDENTS (1988 - 1998) FOR PART 103 (ULTRALIGHT VEHICLES) AND LIGHT-SPORT AIRCRAFT OPERATORS (PART 91)

APPENDIX A - ACCIDENTS FOR PART 103 (ULTRALIGHT VEHICLES) AND LIGHT-SPORT AIRCRAFT OPERATORS (PART 91).

(1988 - 1998)

Year	File #	ST	Type of Vehicle/AC	14 CFR Part	Operating Certificate	Type of Flt. Oper.	Certificate/ Rating:	Cause(s):	** Aircraft Damage ** Destroyed	Substantial	**** Casualty Losses **** # of Fatalities	# of Serious Injuries	# of Minor Injuries
1988	346	FL	Denny Kitfox	91	None	Personal	Private, SEL	1		X			1
			NTSB Finding: The plt stated that he was flying in the homebuilt acft area at the "sun" and "fun fly in" when the engine quit. An attempt was made to land in a field, which he could not make, and came to rest in some scrub trees. The plt also stated that he had been having problems with the fuel mixture since he had been in Florida and that was the reason the engine quit.										
1988	1868	NY	Stephenson U-2	91	None	Personal	Private, SEL	1,3,4,5	X			1	
			NTSB Finding: During a pleasure flight, while soaring with the engine at idle, the flying wing motor glider inadvertently entered a stall. The pilot did not recover from the stall and the airplane began to spin. The pilot was able to regain control at approximately 50 feet agl. He then regained about 200 feet of altitude; however, when power was applied, the engine did not respond. The plt made a forced landing in a grape vineyard. The plt stated that he had engine problems previous to this flight but thought he had resolved them.										
1988	2528	CA	Driter XPP503	91	None	Personal	Private, SEL	1,2,3,4		X			1
			NTSB Finding: The plt rptd that during a prefit, he noted the fuel tank was about 1/4 full. He rptd that as he was taking off, the acft was climbing thru about 200 ft agl, when when the eng lost power. From that position, he was unable to rtrn to the arpt or glide to an open field. Subsequently, the acft crashed into treee(s), then fell to the ground. The owner/builder/plt of the home built acft rprtd that the fuel line was not in the propoer position in the fuel tank. He indicated that the accident could have been prevented by properly securing the fuel line.										
1988	2520	NJ	Rutgers Agriplane	91	None	Personal	Airline Transport	1,2		X		1	
1989	1166	FL	Brickman Eipper MXII	91	None	Personal	Private, SEL	1,2,3		X			1
			NTSB Finding: During cruise flt, the eng lost power and would not restart. The flt started to land on a highway, but traffic was heavy, so he elected to land between the highway and a nearby fence. However, he had to maneuver to avoid large signs beside the roadway and subsequently damaged the acft during landing. An exam revealed that a plastic impulse line on the eng, which operated the fuel pump diaphragm, had become cracked, disabling the fuel pump.										
1990	2170	TX	Air Command 447	103	None	Personal	Private, SEL	1,2	X		1		
1990	2213	MA	Aerodyne Vector 727	91	None	Personal	Commercial, SEL	1,2	X		1		
1991	1471	GA	Maxair ARV 582	91	None	Personal	None	1		X		1	1
			NTSB Finding: The non-rated pilot stated that during the takeoff, he lost control of the aircraft and crashed. Investigation revealed that the non-rated pilot had a total of 6 hours of flight time at the time of the accident.										
1991	1160	UT	Richard Cheney TT II	91	None	Personal	Student	1	X			1	
1991	210	CO	Challenger II	91	None	Personal	Commercial, SEL	1,2,3,4	X		1		
1991	681	WA	Max Air Ultralight	91	None	Personal	Commercial, SEL	1		X		1	1
1991	2094	MN	Kolb Twinstar Mk II	91	None	Personal	Private, SEL	1,2	X			1	
			NTSB Finding: Witnesses reported they watched the ultralight take off and noted the elevator oscillating rapidly, "fluttering." They stated the aircraft climbed to about 200 feet above the ground (agl), then the pilot began a turn back toward the airport. According to one witness: "the airplane stalled, went into a spin and crashed." The ultralight impacted terrain in a marshy area less than one mile from the departure airport. Post accident investigation revealed the trim tab control cable had unspooled from the trim tab wheel.										

1991	2247	CA	Beierle Thunder Gull J	91	None	Test Flt.	Private, SEL	1,2,3	X			1	1
1992	2197	VT	Geo. Chaffee Kitfox II	91	None	Personal	Private, SEL	1,2		X			1
			NTSB Finding: This was the pilot's first flight since he built the airplane. According to the pilot, he was going to stay in the traffic pattern to practice touch and go landings; however, during the initial climb the left door "poped open", and the pilot became distracted momentarily. He stated that he tried to avoid the tree tops by pulling back on the yoke, but the airplane stalled and came to rest between two trees. The pilot stated that there was no mechanical malfunctions , and the accident could have been prevented if he had installed a positive latching mechanism on the door.										
1992	2938	OR	Quicksilver MXL II	91	None	Personal	None	1		X		2	
			NTSB Finding: The pilot of the two-place ultralight was cruising over a river canyon when the aircraft impacted a static wire which the pilot had not seen.										
1992	391	MN	Quad City Challenger I	103	None	Personal	Private	1	X				1
1993	227	CA	E.L. Erickson T II	91	None	Personal	None	1,2		X			1
1993	555	OH	Leveck Vancraft	103	None	Personal	Student	1,2		X	1		
1993	1040	AZ	R.J. McCNaul Beaver	91	None	Personal	None	1		X			1
1993	1486	OR	Flake Talon XP	91	None	Personal	None	1		X	2		
			NTSB Finding: After having been missing for 23 months, an unregistered homebuilt airplane, occupied by a non-certificated pilot and a passenger, was found by hunters in mountainous terrain. The terrain was covered with trees in excess of two hundred feet in height. The airplane was found nose down and inverted on steep terrain. At the time of the accident, search and rescue personnel reported that a storm front had moved through the area. The non-certicated pilot had been checked out in the airplane under provisions of 14 CFR 103, about three weeks before the accident. A second seat had been temporarily installed in the airplane for the pilot's checkout; the second seat was to have been removed after the checkout, so the airplane could be operated as an ultralight vehicle. The pilot had accumulated approximately 17 hours of total flight time at the time of the accident.										
1994	2030	OH	Unknown	91	None	Personal	Student	1,2,3	X		1		
1994	867	AK	Starman Teirra II	91	None	Personal	Private, SEL	1,2,3		X			1
			NTSB Finding: Shortly after takeoff, while in cruise flight, the engine quit without warning. A post accident inspection of the engine by an FAA airworthiness inspector revealed that the no. 2 engine cylinder had overheated and seized up. At the time of the accident, the ambient temperature was 95 degrees fahrenheit.										
1994	1407	TX	Harris Dragonfly	91	None	Personal	Private, SEL		X			1	
1994	1979	IL	Ultralight Challenger II	103	None	Personal	Student	1,2		X		1	1
1994	1451	NC	Bartholomew Firestar	91	None	Personal	Private, SEL	1,2,3		X		1	
1995	172	TN	Sprague Hawk Classic	91	None	Personal	None	1					1
1995	116	TN	Kirkpatrick Spr GT 400	91	None	Personal	None	1,2		X			1
1995	572	MI	Quad City Challenger	91	None	Personal	Com. Flt. Instruct.	1,2,3	X				1
1995	564	PA	CCGS Aviation Hawk	91	None	Personal	Private, SEL	1	X		1		

1995	877	OH	BEI Chinook 2S	91	None	Personal	Private, SEL	1,2		X		1	
			NTSB Finding: The pilot reported that during the accident flight he was "....following the course of yellow creek just to enjoy beauty of it" He stated that the airplane was below the elevation of hills on either side of the creek when it collided with power lines in its flight path. The aircraft then "....fell straight down into yellow creek." The pilot stated he did not see the power lines or towers that would indicate the presence of power lines before the collision.										
1995	1550	AL	Ronsrans R 12	91	None	Personal	Private, SEL	1,2,3,4		X		2	
1995	1765	VA	Madsen Rans S12	91	None	Personal	Private, SEL	1,2,3		X			1
			NTSB Finding: The pilot stated that the ultralight airplane's performance appeared normal during the ground roll, liftoff and initial climb. When the airplane was approximately 130 feet above the ground, the engine suddenly stopped. The pilot lowered the nose of the airplane to attain the best glide speed, and made a forced landing in a field. The airplane struck a tree approximately 40 feet above the ground level. Post accident examination of the engine revealed no evidence of preimpact mechanical malfunctionomaly; however, the spark plug electrodes had a dried deposit on them. The spark plugs were cleaned and reinstalled, and the engine was satisfactorily test run.										
1996	1971	MD	Quicksilver Sprint	91	None	Personal	None	1,2	X		1		
			NTSB Finding:										
1996	682	OH	Corben Baby Acre C-1	91	None	Personal	Student	1,2,3		X			1
			NTSB Finding: The pilot reported that he had just purchased the ultralight aircraft, and that a new engine had recently been installed. He stated that the carburetor was examined the day before the accident, and "....it seemed to run OK." According to the pilot, his intention was to taxi the ultralight aircraft to accumulate some hours on the engine, but a gust of wind caught the wing, and the ultralight aircraft lifted off. He stated that he decided to remain in the traffic pattern and return to land, but the engine began to sputter, then lost power. The pilot stated that during the subsequent forced landing the ultralight aircraft struck rising terrain. Post accident examination revealed evidence of fuel contamination. The FAA inspector reported that sludge and water were visible in the lower portion of the fuel tank, and the fuel drain was clogged.										
1996	1537	LA	Flight Star Ultralight	103	None	Personal	None	1,2		X			1
			NTSB Finding:										
1996	1547	AZ	Rainey Rans S-12	91	None	Personal	Private, SEL	1,2,3,4	X		2		
			NTSB Finding: The 2 seat, ultralight type, homebuilt aircarft was observed climbing out after takeoff toward the area of the accident site. Ground witnesses stated that they heard the pitched hum of the engine, which went completely silent and was followed by a bang or thud; however, they did not see the aircraft crash. An FAA inspector examined the aircraft and reported that it impacted the ground in a near vertical nose down descent and that the empenage was torsionally twisted. No broken or disturbed vegetation, or other ground scars were observed beyond the immediate area of the wreckage. No preimpact mechanical problem was noted with the airframe or flight control system. The engine was examined by a powerplant mechanic, who was familiar with the rotax engine. He reported that both spark plugs had no spark due to a broken wire in the ignition coil.										
1997	669	PA	Robbins Kolb Firestar	103	None	Personal	None	1,2		X	1	1	
			NTSB Finding:										
1997	395	CO	Rans S-12 Airaile S-12	91	None	Personal	Private, SEL	1,2		X		1	
			NTSB Finding: A factor was a disconnected lift strut support cable.										

1997	**1752**	MI	Albrecht Sea Rey	91	None	Personal	Private, SEL	2,3,4	X		1		
			NTSB Finding: The airplane was observed to takeoff and reach approximately 150 agl when a power loss was heard. The airplane went into a left bank and then straight down. The airplane did about one and one half spins before impacting the terrain. Examination of the engine revealed both upper and lower spark plugs oil fouled. Closer examination revealed the exhaust valve stem seal had failed. Flight control continuity was established to all flight control surfaces wih no anamalies noted.										
1997	**1596**	MI	Mikowski Challenger II S	91	None	Personal	Private, SEL	1,2,4	X			1	
			NTSB Finding: The improper oil to gas mixture in the fuel during refueling and the pilot did not follow the written instructions from the kit manufacturer.										
1997	**1368**	TX	Quicksilver GT 500	103	None	Personal	None	1		X		1	
			NTSB Finding: The kitplane builder's improper installation of the bolts attaching the left leading edge wing strut fitting to the leading edge spar, which resulted in the eventual failure of the fitting and ensuing loss of control.										
1997	1162	FL	Saldairaga Buccaneer II	91	None	Personal	Student	1,3	X		1		
			NTSB Finding: Failure of the pilot to maintain adequate airspeed, while maneuvering at a low altitude, resulted in an inadvertent stall and subsequent in-flight collision with terrain.										
1998	**353**	AL	M2 Sport 1000	91	None	Personal	None	1,4,6,7	X		2		
			NTSB Finding: According to a witness, there was known low level turbulence off the end of the runway.										
1998	**895**	NC	HBI Dream Machine 582	91	None	Personal	Student	4		X		1	
			NTSB Finding: The non-certificated pilot's inadequate judgement of the required climb rate, and his failure to attain clearance from obtacles.										
1998	**1120**	TX	Kolb Twinstar TA-2	91	None	Personal	Private, SEL	1	X		1		
			NTSB Finding: A factor was the improper design and installation of the elevator trim tab.										
1998	**1121**	TX	Challenger II	103	None	Personal	Private, SEL	1	X		2		
			NTSB Finding: A factor was the pilot's lack of experience in type of vehicle.										
Total									**7**	**13**	**9**	**8**	**8**

Sources: Compiled by the U.S. Department of Transportation, FAA, APO-310, based on data obtained from the National Transportation Safety Board Accident Database, November 2000.

[ ] Represents those accidents omitted from this evaluation because they were determined to be out of scope (I.e., part 103 vehicles not required to comply with nprm or accidents not impacted by nprm).

Cause Codes:
(1) Loss of Control - In-flight
(2) Loss of Engine Power
(3) Forced Landing
(4) n-flight Collision with Terrain/Water or Object
(5) Altitude Deviation, Uncontrolled
(6) In-flight Encounter with Weather
(7) In-flight Collision with Terrain/Water

APPENDIX B

SUMMARY OF HISTORICAL FATAL "FAT ULTRALIGHT" ACCIDENTS (1995-2001) AS COMPILED BY THREE PART 103(ULTRALIGHT VEXICLE) ORGANIZATIONS (ASC, EAA, and USUA), AS PER EXEMPTION NOS. 6080, 3784, 4274, AS AMENDED.

APPENDIX B - FATAL ACCIDENTS INVOLVING "FAT ULTRALIGHTS" COMPLIED BY ASC

(1995 - 2001)

Year	File #	ST	Type of Vehicle/AC	14 CFR Part	Operating Certificate	Type of Flt. Oper.	Certificate/ Rating:	Cause(s):	** Aircraft Damage **		**** Casualty Losses ****		
									Destroyed	Substantial	# of Fatalities	# of Serious Injuries	# of Minor Injuries
1996	ASC1	CA	Hornet-pfw	ex to 103	ex6080	ferry flt	BFI	control blockage	x		1	0	0
1995	ASCn2	AZ	Homebuilt- ppc	none	none	personal	none	metal failure	x		1	0	0
1996	ASC2	IN	Parapln PSE-2 ppw	ex to 103	ex6080	instr	BFI	metal failure	x		1	0	0
1997	ASC3	WA	Avid -pfw	ex to 103	ex6080	instr	BFI	midair	x		3	0	0
1997	ASC4	NY	Challenger-pfw	ex to 103	ex6080	instr	BFI	spar crack	x		2	0	0
1999	ASC5	FL	Buckeye-ppw	ex to 103	ex6080	instr	BFI	fouled lines	x		2	0	0
1999	ASC6	AZ	Cosmos-pws	ex to 103	ex6080	instr	BFI	missing bolt PE	x		1	0	0
1999	ASC7	ME	Buckeye-ppw	ex to 103	ex6080	instr	BFI	engine failure		x	1	0	1
2000	ASC8	MO	Challenger-pfw	ex to 103	ex6080	instr	BFI	Student froze - PE	x		1	0	1
2000	ASC9	MI	trike-pws	ex to 103	ex6080	instr	BFI	Student froze - PE	x		1	0	0
2000	ASC10	PA	Skyboy-pfw	ex to 103	ex6080	instr	BFI	Stall Spin	x		2	0	0
2000	ASC11	WA	Cosmos-pws	ex to 103	ex6080	instr	BFI	Aerobatics-PE	x		2	0	0
2000	ASC12	CA	Sabre-pws	ex to 103	ex6080	instr	BFI	Aerobatics-PE	x		2	0	0
2001	ASCn2	FL	trike-pws	none	none	personal	none	Aerobatics-PE	x		1	0	0
1996	ASCn3	CA	Challenger-pfw	none	none	personal	none	Pilot error	x		1	0	0
1996	ASCn4	MN	Tbird-pfw	none	none	personal	none	Stall Spin	x		2	0	0
1996	ASCn5	OH	Quicksilver I-pfw	none	none	personal	none	stall spin	x		1	0	0
1996	ASCn6	AZ	Wizard-pfw	none	none	personal	none	Pilot error	x		1	0	0
2001	ASC13	IA	T-bird-pfw	ex to 103	ex6080	instr	BFI	Weather	x		2	0	0
2001	ASC14	CA	Flightstar-pfw	ex to 103	ex6080	instr	BFI	fog disorientation	x		1	0	0
TOTAL									19	1	29		

Source: Compiled and provided by Aero Sport Connection (ASC), August 2001.

Cause Codes:
(1) Loss of Control - In-flight

APPENDIX B - FATAL ACCIDENTS INVOLVING "FAT ULTRALIGHTS" COMPLIED BY EAA

2001

Year	File #	ST	Type of Vehicle/AC	14 CFR Part	Operating Certificate	Type of Flt. Oper.	Certificate/ Rating:	Cause(s):	** Aircraft Damage **		**** Casualty Losses ****		
									Destroyed	Substantial	# of Fatalities	# of Serious Injuries	# of Minor Injuries
2000		WI	Quicksilver MXLII	103	None	Training	UL Instructor	1,7		X	1	1	
			Probable Cause: Aircraft departure stall unable to recover from stall before impact with the ground.										
2000		MI	Pegasus Trike	103	None	Training	UL Instructor	1,5,7	X		2		
			Probable Cause: Pilot exceeded the manufacturer's recommended operating limitations resulting in inflight structural failure.										
2001		FL	Driter 503	103	None	Training	UL Instructor			X	1		
			Probable cause: Personal watercraft struck left side of full lotus float, broke off and disabled plane. Personal watercraft operator determined to the Sheriff to be operating in a reckless manner and at fault. Watercraft operator was fatally injured. No injuries to ultralight instructor or student.										
TOTAL									**1**	**2**	**4**		

Source: Compiled and provided by Experimental Aircraft Association (EAA), August 2001.

[ ] Represents those accidents omitted from this evaluation because they were determined to be out of scope (I.e., part 103 vehicles not required to comply with nprm or accidents not impacted by nprm).

Cause Codes:
(1) Loss of Control - In-flight
(2) Loss of Engine Power
(3) Forced Landing
(4) n-flight Collision with Terrain/Water or Object
(5) Altitude Deviation, Uncontrolled
(6) In-flight Encounter with Weather
(7) In-flight Collision with Terrain/Water

FATAL ACCIDENTS UNDER USUA TRAINING EXEMPTION

1994 - 2001

Year	ST	Type of Vehicle/AC	14 CFR Part	Operating Certificate	Type of Flt. Oper.	Certificate/ Rating:	Cause(s):	" Aircraft Damage "		**** Casualty Losses ****		
								Destroyed	Substantial	# of Fatalities	# of Seri Injuries	# of Minor Injuries
1996	CA	Quicksilver MXLII (fw)	103	exemption 4274	Training	UL Instructor	1	x		2	0	0
		Probable Cause: Structural Failure of aircraft caused by Wing Fabric Failure. This was followed by loss of control of aircraft in flight										
1996	FL	Quicksilver MXLII(fw)	103	exemption 4274	Training	UL Instructor	1,7	X		2	0	0
		Probable Cause: Structural Failure of aircraft caused by Wing Wire failure. This was followed by loss of control of aircraft in flight and in flight collison with the ground.										
1995	FL	Kolb Twinstar(fw)	103	exemption 4274	Training	UL Instructor	1,7	x		1	0	0
		Probable Cause: Loss of Control resulted in in-flight collision with terrain										
1995	FL	Quad City Challenger(fw)	103	exemption 4274	Training	UL Instructor	2,3,7	x		2	0	0
		Probable Cause: Forced landing was initiated after loss of engine power. This was caused by an Engine Component Failure										
1997	NJ	Tukan Trike (wsc)	103	exemption 4274	Training	UL Instructor	1,7	x		1	0	0
		Probable Cause: Loss control while training. Pilot was transitioning from three axis aircraft to weight shift control aircraft.										
1999	CA	Quicksilver MXLII (fw)	103	exemption 4274	Training	UL Instructor	1,7	x		2	0	0
		Probable Cause: Loss of control in-flight resulting in a collision with the ground when parachute bridle entangled propellor. This was caused by a improper structural modication to vehicle										

Causal Factors

(1) Loss of Control - In-flight
(2) Loss of Engine Power
(3) Forced Landing
(4) In-flight Collision with Terrain/Water or Object
(5) Altitude Deviation, Uncontrolled
(6) In-flight Encounter with Weather
(7) In-flight Collision with Terrain/Water

Source: Compiled and provided by U.S. Ultralight Association (USUA), August 2001

APPENDIX C
SUMMARY OF ACCIDENT DATA

APPENDIX C - ACCIDENT DATA SUMMARY 1995-2001		
ACCIDENT COMPILED BY:	NUMBER OF ACCIDENTS	FATALITIES
NTSB	13	9
ASC	20	29
EAA	2	3
USUA	6	10
TOTAL	**41**	**51**
Sources: FAA, APO-310 and AFS-800, September 2001.		