

## DEPARTMENT OF TRANSPORTATION

## National Highway Traffic Safety Administration

## 49 CFR Part 571

[Docket No. NHTSA 98-3949]

RIN 2127-AG58

## Federal Motor Vehicle Safety Standards

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), DOT.  
**ACTION:** Final rule.

**SUMMARY:** This final rule responds to a growing public interest in using golf cars<sup>1</sup> and other similar-sized, 4-wheeled vehicles to make short trips for shopping, social and recreational purposes primarily within retirement or other planned communities with golf courses. These passenger-carrying vehicles, although low-speed, offer a variety of advantages, including comparatively low-cost and energy-efficient mobility. Further, many of these vehicles are electric-powered. The use of these vehicles, instead of larger, gasoline-powered vehicles like passenger cars, provides quieter transportation that does not pollute the air of the communities in which they are operated.

Currently, there is a growing conflict between state and local laws, on the one hand, and Federal law, on the other, in the treatment of these small vehicles. That conflict unnecessarily restricts the ability of vehicle manufacturers to produce and sell, and the ability of consumers to purchase, these vehicles. In recent years, a growing number of states from California to Florida have passed legislation authorizing their local jurisdictions to permit general on-road use of "golf carts," subject to speed and/or operational limitations. A majority of those states condition such broad use upon the vehicles' having specified safety equipment. Further, some of these states have opened the way for the use of vehicles that are faster than almost all golf cars. Most conventional golf cars, as originally manufactured, have a top speed of less than 15 miles per hour. These states have either redefined "golf carts" to include vehicles designed to achieve up to 25 miles per hour or have established a new class of vehicles, "neighborhood electric vehicles," also defined as capable of achieving 25 miles per hour.

<sup>1</sup> While many members of the general public use the term "golf cart," the manufacturers of those vehicles use the term "golf car." This final rule uses "golf car," except in those instances in which the other term is used in a quotation.

Under current NHTSA interpretations and regulations, so long as golf cars and other similar vehicles are incapable of exceeding 20 miles per hour, they are subject to only state and local requirements regarding safety equipment. However, if these vehicles are originally manufactured so that they can go faster than 20 miles per hour, they are treated as motor vehicles under Federal law. Similarly, if golf cars are modified after original manufacture so that they can achieve 20 or more miles per hour, they too are treated as motor vehicles. Further, as motor vehicles, they are currently classified as passenger cars and must comply with the Federal motor vehicle safety standards for that vehicle type. This creates a conflict with the state and local laws because compliance with the full range of those standards is not feasible for these small vehicles.

To resolve this conflict, and to permit the manufacture and sale of small, 4-wheeled motor vehicles with top speeds of 20 to 25 miles per hour, this final rule reclassifies these small passenger-carrying vehicles. Instead of being classified as passenger cars, they are now being classified as "low-speed vehicles." Since conventional golf cars, as presently manufactured, have a top speed of less than 20 miles per hour, they are not included in that classification.

As low-speed vehicles, these 20 to 25 mile-per-hour vehicles are subject to a new Federal Motor Vehicle Safety Standard No. 500 (49 CFR 571.500) established by this final rule. The agency notes that the growing on-road use of golf cars has already resulted in some deaths and serious injuries, and believes that the new standard is needed to address the effects in crashes of the higher speed of low-speed vehicles. The standard requires low-speed vehicles to be equipped with headlamps, stop lamps, turn signal lamps, taillamps, reflex reflectors, parking brakes, rearview mirrors, windshields, seat belts, and vehicle identification numbers. The agency believes that these requirements appropriately address the safety of low-speed vehicle occupants and other roadway users, given the sub-25 mph speed capability of these vehicles and the controlled environments in which they operate.

This rulemaking proceeding was initiated in response to a request by Bombardier, Inc., that the agency make regulatory changes to permit the introduction of a new class of 4-wheeled, passenger-carrying vehicle that is small, relatively slow-moving, and low-cost.

**DATES:** The final rule is effective June 17, 1998. Petitions for reconsideration must be filed not later than August 3, 1998.

Incorporation by reference of the materials listed in this document is approved by the Director of the Federal Register and is effective upon publication in the **Federal Register**.

**ADDRESSES:** Petitions for reconsideration should refer to the Docket number and be submitted to Docket Management, PL-401, 400 7th Street, SW, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:**

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## I. Glossary

Since some of the groups of vehicles discussed in this final rule may be unfamiliar to many readers, the agency has listed and defined them below. In addition, it has shown their relationship to each other in the graph following the list.

“*Sub-25 mph vehicle*” means any 4-wheeled vehicle whose top speed is not greater than 25 miles per hour. This group includes all of the vehicles in the other groups below, except those speed-modified golf cars whose top speed is greater than 25 miles per hour.

“*Conventional golf car*” means either a fleet golf car or a personal golf car.

(A) “*Fleet golf car*” means a golf car used solely to carry one or more people and golf equipment to play golf. These are sold to golf courses.

(B) “*Personal golf car*” means a golf car used to carry one or more people and may carry golf equipment to play golf. These are sold to individual people who may use them to travel on public roads to and from golf courses and to play golf, to travel on public roads on purposes unrelated to golf, or for all of these purposes.

“*Speed-modified golf car*” means a conventional golf car that was modified, after its original manufacture, so as to

increase its speed. While some speed-modified golf cars have a top speed of 20 to 25 miles per hour, others have a higher top speed. That modification may currently be accompanied by the addition of safety equipment required for the on-road use of the golf car.

“*Neighborhood electric vehicle*” means any 4-wheeled electric vehicle whose top speed is not greater than 25 miles per hour. Some of these vehicles look more like a passenger car than a conventional golf car.

“*Low-speed vehicle*” means any 4-wheeled motor vehicle whose top speed is greater than 20 miles per hour, but not greater than 25 miles per hour. This group includes neighborhood electric vehicles, and speed-modified golf cars, whose top speed is greater than 20 miles per hour, but not greater than 25 miles per hour.

## II. Executive Summary

### A. The Final Rule

Since 1966, NHTSA has been directed by the National Traffic and Motor Vehicle Safety Act (“Vehicle Safety Act”) (now codified as 49 U.S.C. Chapter 301) to issue Federal motor vehicle safety standards (FMVSSs) for motor vehicles and to ensure that those standards are appropriate for each class of motor vehicle to which they apply.<sup>49</sup> U.S.C. 30111(a) and (b)(3). As the vehicles within a class evolve in design or use or as the size of a class changes substantially relative to the sizes of other classes, the standards applicable to that class typically must evolve to keep pace with changing safety needs and priorities. For example, the substantial increase in the number of passenger vans and other types of light trucks and multipurpose passenger vehicles (and the increase in the personal use of these vehicles) in the 1980’s led the agency to extend the requirements for passenger cars to those classes of vehicles. More recently, the increasing size and prevalence of sport utility vehicles has led the agency to examine the compatibility of those vehicles and smaller vehicles and review the standards applicable to those vehicles. Similarly, the appearance of new vehicles, such as electric vehicles and compressed natural gas vehicles, has made it necessary for the agency to issue new requirements tailored to the particular anticipated safety issues associated with those vehicles.

This rulemaking involves another instance in which the agency is called upon to adjust its standards to reflect changes in the vehicle population. Transportation needs are changing as the number of retirement and other

planned communities grow. These communities are particularly numerous in the southern tier or Sunbelt states such as California, Arizona, and Florida.<sup>2</sup> Many residents within these communities do not need or want a conventional motor vehicle like a passenger car to make short trips to visit friends, to run errands, or, if they are golfers, to go to the golf course. They prefer to use a smaller, 4-wheeled vehicle with limited-speed capability, such as a golf car, that is less costly and, if electric, emission free.

For years, a common practice among those relatively few states then permitting on-road use of golf cars was to allow such use only within a specified distance (generally ranging from ½ mile to 2 miles) from a golf course. “Golf carts” were defined by several of the states as having a top speed of 15 miles per hour or less.

In recent years, however, a growing number of states from California to Florida have passed legislation eliminating or establishing exceptions to the requirement that the on-road use of golf cars be in the vicinity of a golf course and authorizing their local jurisdictions to permit general on-road use of “golf carts,” subject to speed and/or operational limitations.<sup>3</sup> Nine of the 12 states now authorizing general on-road use condition such broader use upon the golf cars’ meeting requirements for safety equipment. In all, 16 states<sup>4</sup> now have laws authorizing their local governments to

<sup>2</sup> Some of the better known and most frequently-reported on examples of golf car communities are the City of Palm Desert, California, Sun City and Sun City West, Arizona, Peachtree City, Georgia (golf car operation there is restricted to dedicated paths), and Sun City Center and The Villages of Lady Lake, Florida.

<sup>3</sup> State laws regarding the on-road use of golf cars appear to have gradually evolved in the last 15–20 years, particularly in the last 5 years, so as to expand the extent to which golf cars can be used on public roads. Several distinct stages of evolution are discernible:

- permitting golf car operators to cross public roads cutting through golf course;
- permitting golf cars to be used on roads in vicinity of golf course to make trips to and from golf course within golf community;
- permitting golf car use on roads designated by local governments; and
- permitting use of NEVs and golf cars with top speed of up to 25 miles per hour.

Some states have progressed through several stages in sequence, while others have apparently skipped the first several stages and begun with one of the latter stages.

<sup>4</sup> Twelve states have a law permitting all-purpose trips with potentially broad areas: Arizona, California, Colorado, Florida, Georgia, Illinois (awaiting governor’s signature), Iowa, Minnesota, Nevada, New Mexico, Texas, and Wyoming. One state has a law permitting all-purpose trips within vicinity of a person’s residence: South Carolina. Three states have a law permitting trips to and from golf course: Arkansas, Oregon and Wisconsin.

permit golf cars either to be used generally on public streets designated by local governments (12 states) or within the vicinity of golf courses or a person's residence (4 states).

Further, three states have changed their laws to reflect the existence of sub-25 mph vehicles that are faster than almost all golf cars. They have either replaced an old statutory provision defining "golf carts" as having a top speed up to 15 miles per hour with a new one defining them as having a top speed up to 25 miles per hour<sup>5</sup> or have added a new class of vehicles, "neighborhood electric vehicles," also capable of achieving 25 miles per hour.<sup>6</sup>

In addition to meeting a transportation need of these communities, sub-25 mph vehicles also help them meet some of their environmental goals. These vehicles are energy-efficient. Further, many of them are battery-powered, and thus emission free and quiet. To the extent that emission-free vehicles replace conventional vehicles powered by internal combustion engines, they help state and local officials in meeting ambient air quality standards under the Clean Air Act. For example, the City of Palm Desert, California, estimates that it has achieved an emissions reduction of 16 tons of carbon monoxide annually since implementing its program allowing golf cars to use the public streets. Further, as noted by the Economic Development Department of Arizona Public Service, the state's largest utility company, the use of electric vehicles also produces reductions in emissions of hydrocarbons, nitrogen oxide, and carbon dioxide.

There is currently a Federal regulatory barrier to the manufacture and sale of a segment of the sub-25 mph vehicle

<sup>5</sup>For the purpose of statutory provisions relating to golf car transportation plans, California defines a "golf cart" as "a motor vehicle having not less than three wheels in contact with the ground, having an unladen weight less than 1,300 pounds, which is designed to be and is operated at not more than 25 miles per hour and designed to carry golf equipment and not more than two persons, including the driver." California Streets & Highways Code § 1951. (For all other purposes, California Vehicle Code § 345 continues to define "golf carts" as "a motor vehicle . . . which is designed to be and is operated at not more than 15 miles per hour . . .") Arizona has a definition similar to § 1951, except that it specifies an unladen weight of less than 1,800 pounds and a capability of carrying not more than four persons, including the driver. A.R.S. § 28-101(22).

<sup>6</sup>Arizona defines a "neighborhood electric vehicle" as an emission free motor vehicle with at least 4 wheels in contact with the ground and an unladen vehicle weight of less than 1,800 pounds that is designed to be and is operated at not more than 25 mph and is designed to carry no more than four persons. A.R.S. § 28-101(32). Colorado has a similar term and definition. C.R.S 42-1-102 (60.5).

group. Under longstanding agency interpretations, vehicles used on public roads are regarded by this agency as "motor vehicles" within the meaning of the Vehicle Safety Act if they have a top speed greater than 20 miles per hour. If sub-25 mph passenger-carrying vehicles have a top speed exceeding 20 miles per hour, they are classified in the same manner as much faster and larger motor vehicles (i.e., as passenger cars). Further, they are subject to the same FMVSSs developed to meet the particular safety needs of passenger cars. Since the application of these FMVSSs to these sub-25 mph passenger-carrying vehicles would necessitate the addition of a considerable amount of structure, weight and cost, such application appears to preclude their production and sale. In addition, given the limited-speed capability and relatively controlled operating environments of these vehicles, it does not currently appear necessary from a safety standpoint to design them to meet the full range of passenger car FMVSSs, especially those incorporating dynamic crash requirements.

This rulemaking eliminates the conflict between the state and local laws, on the one hand, and the Federal requirements, on the other, by removing these sub-25 mph vehicles with a top speed range of 20 to 25 miles per hour from the passenger car class of motor vehicles and placing them in a new class subject to its own set of safety requirements.<sup>7</sup> As noted above in the summary section, the new class is called low-speed vehicles (LSV). LSVs include any 4-wheeled vehicle, other than a truck, with a maximum speed greater than 20 miles per hour, but not greater than 25 miles per hour.

There are currently two types of vehicles that will qualify as LSVs. One type is the golf car. All conventional golf cars, as now originally manufactured, have a top speed of less than 20 miles per hour, and thus, do not meet the speed capability threshold for LSVs. However, some conventional golf cars are modified so as to go more than

<sup>7</sup>This action is analogous to the agency's decision in 1968 to regulate small, low-powered motorcycles differently than larger, higher-powered motorcycles. To implement this decision, the agency established a subclass of motorcycles called "motor-driven cycles." NHTSA then determined which of the requirements in the safety standards for the larger, higher-powered motorcycles would be appropriate for application to motor-driven cycles. The agency excluded motor-driven cycles from some requirements, while making them subject to other requirements. By means of this tailoring, the agency effectively balanced its responsibilities to assure that its standards:

- protect the public from unreasonable risk, and
- are practicable and appropriate for the particular vehicle type.

20 miles per hour. Those speed-modified golf cars whose top speed is between 20 and 25 miles per hour qualify as LSVs. Similarly, there is a very small number of originally manufactured custom golf cars that are not modified conventional golf cars and that have a top speed above 20 miles per hour. Some of them look very much like passenger cars. Those custom golf cars with a top speed between 20 and 25 miles per hour qualify as LSVs.

The other vehicles that will qualify as an LSV are so-called "Neighborhood Electric Vehicles" or "NEVs." Current NEVs are bigger and heavier, and have more superstructure than golf cars. Further, as originally manufactured, current NEVs have top speeds of 25 miles per hour. However, like golf cars, they do not have doors, and thus have neither heating systems nor air conditioners.

LSVs will be subject to a new FMVSS, Standard No. 500, *Low-Speed Vehicles*, established by this final rule. This standard is being issued in recognition of the fact that the growing on-road use of golf cars has already resulted in some deaths and serious injuries. The agency has information indicating that there were 16 deaths of golf car occupants on the public roads from 1993 to 1997. The standard's requirements are based primarily upon a regulation that the City of Palm Desert, California, established in 1993 for golf car owners seeking to register their golf cars for use on the city's streets. The new FMVSS requires LSVs to be equipped with basic items of safety equipment: headlamps, stop lamps, turn signal lamps, taillamps, reflex reflectors, parking brake, windshields of either type AS-1 or type AS-5 glazing, rearview mirrors, seat belts and vehicle identification numbers (VINs).

In view of the uncertainty among commenters about compliance responsibilities under Standard No. 500, the agency wants to clarify the responsibilities of each group of interested parties.<sup>8</sup>

- *Manufacturers of conventional golf cars.* Golf car manufacturers have no

<sup>8</sup>Manufacturers of custom golf cars, dealers and other commercial entities that modify golf cars, and manufacturers of NEVs may wish to obtain a copy of NHTSA regulations (in Title 49 Code of Federal Regulations Parts 400-999 revised as of October 1, 1997, available from a U.S. Government Bookstore). Among other things, these parties will need to obtain a VIN identifier from the Society of Automotive Engineers, as specified in Part 565. They will also have to prepare and affix certification labels in accordance with Part 567 when their low-speed vehicles have been conformed and are ready for sale. Finally, they must file an identification statement that meets the requirements of Part 566 not later than 30 days after beginning manufacture of a low-speed vehicle.

compliance responsibilities so long as they continue their current practice of limiting the top speed of their golf cars, as originally manufactured, to less than 20 miles per hour.

- *Manufacturers of custom golf cars.* Manufacturers of custom golf cars are subject to Standard No. 500 if the top speed of their vehicles is between 20 and 25 miles per hour and to the FMVSSs for passenger cars if their top speed is above 25 miles per hour.

- *Dealers and other commercial entities that modify golf cars.* If dealers and other commercial entities modify conventional golf cars so that their top speed is increased to between 20 and 25 miles per hour, those dealers and entities must conform the modified golf cars to Standard No. 500 and certify their compliance with that standard. This requirement covers all golf cars modified on or after the effective date of Standard No. 500, regardless of when the golf car was originally manufactured.

- *Manufacturers of NEVs.* Any manufacturer of a NEV whose top speed is between 20 and 25 miles per hour must ensure that the vehicle complies with Standard No. 500 and certify its compliance with that standard. This requirement covers all new NEVs manufactured on or after the effective date of Standard No. 500.

In response to concerns expressed by several commenters, NHTSA wishes to address several matters concerning the effect that issuing Standard No. 500 has on state and local laws. First, as noted in the NPRM, this final rule does not alter the ability of states and local governments to decide for themselves whether to permit on-road use of golf cars and LSVs.

Second, state and local governments may supplement Standard No. 500 in some respects. They may do so by requiring the installation of and regulate the performance of safety equipment not required by the standard. However, the states and local governments may not specify performance requirements for the safety equipment that is required by the standard. The agency tentatively decided in the NPRM that LSV manufacturers need not comply with requirements regulating the performance of any items of equipment (except seat belts) required by the standard. Seat belts are required to meet Standard No. 209, *Seat belt assemblies*. The agency is making that decision final in this rule.

Third, the agency notes that the issuance of Standard No. 500 does not require current owners of speed-modified golf cars having a top speed between 20 to 25 miles per hour to

retrofit them with the equipment specified in the standard. The decision whether to require retrofitting of golf cars that are already on the road remains in the domain of state and local law.

#### *B. Comparison of Notice of Proposed Rulemaking and Final Rule*

NHTSA proposed that the low-speed vehicle standard be designated Standard No. 100. However, since the standard contains both crash avoidance and crashworthiness requirements, NHTSA has decided to adopt a number for the new standard that is outside both the 100 series of standards and the 200 series of standards. The new standard will be known as Standard No. 500, *Low-speed vehicles*, 49 CFR 571.500.

This final rule adopts, in most other respects, the standard as it appeared in the agency's January 8, 1997 notice of proposed rulemaking (NPRM) (62 FR 1077). It requires all the proposed safety equipment, except the warning label, and, as requested by some commenters, adds a requirement for a VIN. In response to comments regarding the need for requiring means of enhancing rear conspicuity beyond that provided by the proposed taillamps and stop lamps, the agency has added a requirement for a rear reflex reflector to help following drivers detect the presence of a parked or stopped LSV at night. In response to a request of the National Golf Car Manufacturers Association (NGCMA) that manufacturers be allowed to install polycarbonate windshields, the final rule permits a choice between either AS-5 polycarbonate glazing or AS-1 safety glass for LSV windshields.<sup>9</sup> In addition, to provide a means for determining whether a vehicle's speed qualifies it as a LSV, the agency has added a test procedure for determining maximum vehicle speed. The procedure is based largely on the maximum speed test procedure in the industry standard for golf cars,<sup>10</sup> and on provisions in American Society for Testing and Materials standards regarding determination of pavement friction.

The final rule differs from the proposal in one other important respect. The standard has been amended so that it applies to a narrower population of vehicles. Before the issuance of the proposal, NGCMA represented that: (1)

<sup>9</sup>Those types of glazing are defined in the American National Standard Institute's "Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways" Z26.1-1977, January 26, 1977, as supplemented by Z26.1a, July 3, 1980.

<sup>10</sup>ANSI/NGCMA Z130.1-1993, "American National Standard for Golf Cars—Safety and Performance Requirements."

Its members<sup>11</sup> do not manufacture any golf cars for use on the public roads; (2) the industry standard for all golf cars used exclusively on golf courses specifies a maximum speed of 15 miles per hour; and (3) its members fully meet the industry standard.<sup>12</sup> Also, at a public meeting held by the agency on July 25, 1996, NGCMA asked the agency to mandate speed limits not to exceed 15 miles per hour for golf cars on public roads.

Based on this information and request from NGCMA, it appeared to NHTSA that 15 miles per hour was the appropriate dividing line not only between golf cars manufactured for golf course use and those manufactured for both on-road use and golf course use, but also between conventional golf cars and speed-modified golf cars.<sup>13</sup> The agency tentatively concluded that if a golf car manufacturer produced golf cars with a top speed capability above the industry standard, i.e., above 15 miles per hour, that the "manufacturer must intend its vehicles to be used on public roads as well as one golf courses." (62 FR 1082) Accordingly, the agency drafted the proposal to cover vehicles with a maximum speed capability greater than 15 miles per hour, but not greater than 25 miles per hour. Based on what it had been told by NGCMA, the agency believed that its proposal would affect virtually no conventional golf cars, as originally manufactured.

Since the NPRM, NHTSA has obtained new information from NGCMA. In response to a May 1998 inquiry by the agency, NGCMA said that 1 percent of Club Car's fleet golf cars, and 75 percent of its personal golf cars, have a top speed between 15 and 20 miles per hour.<sup>14</sup> Thus, contrary to the agency's expectation, the proposal would have applied to a significant minority of Club Car's golf cars.

Based on this new information, the agency has decided to limit the application of Standard No. 500 to vehicles whose top speed is between 20 and 25 miles per hour. This decision

<sup>11</sup>NGCMA represents the original equipment manufacturers of 95 percent of all golf cars manufactured and distributed in the United States. Its four largest members, in terms of golf car production, are E-Z-GO, Club Car, Yamaha, and Melex.

<sup>12</sup>The golf car industry indicated at NHTSA's July 25, 1996 public meeting that its members adhere to the standard "100 percent."

<sup>13</sup>The agency noted that there was one model of golf car whose top speed, as originally manufactured, reportedly exceeded 15 miles per hour. No information relating to the production volume of that model was available at that time.

<sup>14</sup>NGCMA confirmed that E-Z-GO, Yamaha, and Melex do not produce any golf cars whose top speed exceeds 15 miles per hour.

carries out the agency's original intention of excluding virtually all conventional golf cars, as originally manufactured, from the standard.

The agency also believes that 20 miles per hour is a better dividing line between vehicles designed for use on the golf course and vehicles designed for on-road use. The conventional golf cars with a top speed between 15 and 20 miles per hour have a body and understructure very similar to that of conventional golf cars with a top speed less than 15 miles per hour. Further, while the speed differential between those two groups of golf cars creates a significant difference in their potential crash energy, the energy in the 15 to 20 mile-per-hour range is still modest compared to that of LSVs.<sup>15</sup> According to NGCMA, golf cars with a top speed of less than 15 miles per hour typically have a top speed of about 12 miles per hour. Those with a top speed between 15 and 20 miles per hour are believed by the agency to have a top speed of approximately 17 to 18 miles per hour.

The practical safety effects of raising the speed threshold do not appear to be extensive. Data obtained since the NPRM regarding the limited number of fatalities associated with on-road use of conventional golf cars indicate that the state and local governments are adequately providing for the safety of on-road users of those golf cars.

However, NHTSA concludes that Federal action is needed to address the safety problems that the agency anticipates will be associated with vehicles whose top speed is between 20 and 25 miles per hour. The speed differential between those vehicles and the great bulk of golf cars whose top speed is less than 15 miles per hour is as much as 12 miles per hour, while the speed differential between golf cars whose top speed is between 15 and 20 miles per hour and slower golf cars is about half that, i.e., 5-6 miles per hour. The crash forces that 20 to 25 mile-per-hour vehicles will experience are significantly greater than those for 15 to 20 mile-per-hour golf cars and much greater than those for sub-15 mile-per-hour golf cars. Those greater forces make it necessary to require that LSVs be equipped with more safety features than the states and their local jurisdictions currently require for conventional golf cars used on-road. Most important, it makes it necessary to require seats belts. Seat belts can prevent LSV occupants from falling out

<sup>15</sup> The potential crash energy of a vehicle increases at a greater rate than increases in the vehicle's speed. This is because an object's acceleration (or deceleration) equals the mass of the object times the velocity squared.

during abrupt maneuvers and prevent or reduce their ejection during crashes.

Finally, vehicles with "work performing equipment" (i.e., certain trucks) would have been LSVs under the proposal, although not required to meet Standard No. 500. Under the final rule, these vehicles are no longer included LSVs and must continue to meet truck FMVSSs. This change is consistent with the rationale of this rulemaking, which is to eliminate a regulatory conflict involving passenger-carrying vehicles. Further, NHTSA concludes that the truck FMVSSs remain appropriate for trucks with a speed capability between 20 and 25 miles per hour and that these standards have not inhibited their introduction in the past.

### III. Background

#### A. Introduction; Sub-25 MPH Vehicles and the Traditional Interpretation of "Motor Vehicles"

Title 49 U.S.C. Chapter 301 grants NHTSA regulatory authority over "motor vehicles." All "motor vehicles" are subject to the Federal motor vehicle safety standards promulgated by NHTSA pursuant to 49 U.S.C. 30111, and to the notification and remedy provisions of 49 U.S.C. 30118-30121. A "motor vehicle" is a vehicle "manufactured primarily for use on the public streets, roads, and highways" 49 U.S.C. 30102(a)(6). The agency's interpretations of this term have centered around the meaning of the word "primarily." The agency has generally interpreted the term to mean that a significant portion of a vehicle's use must be on the public roads in order for the vehicle to be considered to be a motor vehicle.

NHTSA's principal interpretation of the definition of "motor vehicle" dates from 1969, and addressed the status of mini-bikes. NHTSA said that it would initially defer to the manufacturer's judgment that a vehicle was not a "motor vehicle." However, the agency said, the decision and subjective state of mind of the manufacturer "\* \* \* cannot be conclusive \* \* \*." NHTSA said that to resolve the question of whether a particular vehicle is a motor vehicle, it would

invoke the familiar principle that the purpose for which an act, such as the production of a vehicle, is undertaken may be discerned from the actor's conduct in the light of the surrounding circumstances. Thus, if a vehicle is operationally capable of being used on public thoroughfares, and if in fact, a substantial proportion of the consumer public actually uses [it] in that way, it is a "motor vehicle" without regard to the manufacturer's intent, however manifested. In such a case, it would be incumbent upon

a manufacturer of such a vehicle either to alter the vehicle's design, configuration, and equipment to render it unsuitable for on-road use or, by compliance with applicable motor vehicle safety standards, to render the vehicle safe for use on public streets, roads, and highways.

(October 3, 1969; 34 F.R. 15147)

To resolve borderline cases, NHTSA set forth criteria that it said it would employ in determining whether a particular vehicle is a "motor vehicle." The agency stated:

[p]erhaps the most important of these [criteria] is whether state and local laws permit the vehicle in question to be used and registered for use on public highways. The nature of the manufacturer's promotional and marketing activities is also evidence of the use for which the vehicle is manufactured.

Noting the comparative rarity of mini-bike use on public streets, and that the registration of mini-bikes for use on public streets was precluded by laws of most jurisdictions unless they were equipped with Standard No.108-type lighting devices, NHTSA said it would not consider mini-bikes to be "motor vehicles" if their manufacturers met the following criteria:

- (1) Do not equip them with devices and accessories that render them lawful for use and registration for use on public highways under state and local laws;
- (2) Do not otherwise participate or assist in making the vehicles lawful for operation on public roads (as by furnishing certificates of origin or other title document, unless those documents contain a statement that the vehicle was not manufactured for use on public streets, roads, or highways);
- (3) Do not advertise or promote them as vehicles suitable for use on public roads;
- (4) Do not generally market them through retail dealers of motor vehicles; and
- (5) Affix to the mini-bikes a notice stating in substance that the vehicles were not manufactured for use on public streets, roads, or highways and warning operators against such use.

The agency's interpretations since 1969 have added new elements to the mini-bike criteria for determining whether vehicles capable of on-road use are "motor vehicles." The most important exclude vehicles that have "abnormal" configurations and a top speed of 20 miles per hour or less. As an example, NHTSA informed Trans2 Corporation in 1994 that its "low-speed electric vehicle" intended for use in residential communities, university campuses, and industrial complexes was not a "motor vehicle" because it had a top speed of 20 mph and unusual body features that made it readily distinguishable from "motor vehicles." These features included an oval-shaped passenger compartment, taillamps built into headrests, and a configuration the

approximate size and height of a golf cart. On the other hand, in 1995, NHTSA informed Goodlife Motors Corporation that its "super golf car" was a motor vehicle because it had a top speed of 29 mph and its configuration resembled that of a prototype Volkswagen passenger car.

#### B. 1996 Request for Regulatory Relief

In the spring of 1996, Bombardier, Inc., asked NHTSA to make regulatory changes to permit the introduction of a new class of 4-wheeled vehicle that is small, relatively slow-moving, and low-cost. The company had identified retirement communities in the Sunbelt states as likely prospects for a NEV that it was developing. Bombardier's NEV is a two-passenger vehicle, closed at the top but open at the sides, intended for use on city streets at speeds up to 25 miles per hour. It looks very much like a very small passenger car. The Bombardier NEV will be available with a "low speed golf mode" option that reduces the vehicle's maximum speed to 15 miles per hour when the ignition key is turned from "D" (rive) to "G" (olf). However, because Bombardier's NEV would have been classified as a passenger car under the agency's existing interpretations and regulations and because its NEV could not meet the FMVSSs for passenger cars, Bombardier could not offer its small vehicle for sale in the United States.

Accordingly, Bombardier asked the agency to change its longstanding interpretations of what constitutes a motor vehicle as they apply to 4-wheeled vehicles. Under those interpretations, vehicles that were used on-road, but that had a distinctive configuration setting them apart from the normal traffic flow and that were not capable of exceeding 20 miles per hour, were not regarded as motor vehicles. The company asked that the maximum speed threshold used in the agency's interpretations be increased from 20 miles to 25 miles per hour. Bombardier stated that limiting the top speed of its NEV to 20 miles per hour would compromise the ability of the NEV to maneuver in traffic on public streets where it would be operating in a mix with larger and faster vehicles, and limit the marketability of the NEV. Accordingly, it sought a revision of the NHTSA interpretation instead.

#### C. Pre-rulemaking Study and 1996 Public Meetings

Since the use of sub-25 mph vehicles on public roads was a relatively new phenomenon, NHTSA took special steps to acquire information regarding such use. First, the agency commenced a

survey of state laws regarding the use of golf cars on public roads. NHTSA found that the statutes of various states, e.g., California, Arizona, and Florida, gave local governments the authority to allow the use of "golf carts" on public streets. California has authorized all of its cities and counties to establish a Golf Cart Transportation Plan area in which golf carts are permitted to operate on "golf cart lanes," defined as "roadways \* \* \* shared with pedestrians, bicyclists, and other motorists in the plan area." Each plan must include minimum design criteria for safety features on golf carts as well. Arizona provides for registration of both NEVs and golf cars, each of which is defined as a vehicle with a maximum speed of not more than 25 miles per hour, and forbids NEVs from being driven on public roads with posted speed limits higher than 35 miles per hour. Florida has no speed restrictions for golf cars, but requires them to be equipped with "efficient brakes, reliable steering apparatus, safe tires, a rearview mirror, and red reflectorized warning devices in both the front and rear." That state permits operation of golf cars on county roads which have been designated by a county for use by golf cars, or on city streets which have been so designated by a city. Golf cars cannot be operated during the hours between sunset and sunrise under California and Florida law, except that local entities may allow nighttime use of golf cars equipped with headlamps, taillamps and stop lamps.

NHTSA decided to study the California statutes in detail because that state appeared to have the most extensive requirements concerning the on-road safety of golf cars. In 1992, California amended its Streets and Highway Code ("CSHC") to authorize the City of Palm Desert to establish a Golf Cart Transportation Pilot Program (CSHC Secs. 1930-37), and later adopted amendments to giving similar authority to any city or county in California. As noted above, this legislation allows local jurisdictions to establish a Golf Cart Transportation Plan area in which golf cars are permitted to operate on "golf cart lanes", defined as "roadways \* \* \* shared with pedestrians, bicyclists, and other motorists in the plan area" (CSHC 1951). Each plan must include minimum design criteria for safety features on golf cars as well (CSHC 1961).

A plan under the California law must also include a permit process for golf cars to ensure that they meet the minimum design criteria (CSHC 1961). At that time, those criteria were

required to include seat belts.<sup>16</sup> Also, the California law requires an operator to have a valid California driver's license and carry a minimum amount of insurance.

In addition, the law requires a plan to allow only golf cars equipped with the requisite safety equipment to be operated on "separated golf cart lanes" identified in the plan. Lane striping on the pavement surface is sufficient for a lane to qualify as a "separated golf cart lane."

Pursuant to this law, the City of Palm Desert drew up and implemented a golf car transportation plan. As required by then existing state law, the plan included a requirement for seat belts. NHTSA has been informed by the City of Palm Desert that this plan will cover NEVs as well as golf cars.

Under that plan, there are three classes of golf car facilities:

- A "Class I Golf Cart Path," completely separated from public roads, for use by golf cars and bicycles only.
- A "Class II Golf Cart Lane," marked on public roads with posted speed limits up to 45 miles per hour (the separate lane is designated by striping), for use by golf cars and bicycles only.
- A "Class III Golf Cart Route," i.e., public roads with speed limits of 25 miles per hour or less (the route is identified by placing Golf Cart Route signs along roadways). They are for shared use by golf cars and automobile traffic.

To gather further information, NHTSA held a public meeting on July 18, 1996, in the City of Palm Desert, attended by state, county, and city officials from both California and Arizona, golf car manufacturers, owners, a dealer, and two NEV manufacturers.

Fourteen commenters spoke at the meeting, all expressing support for the use of small, 4-wheeled electric vehicles on city streets because of environmental enhancement, consumer benefits, and a good safety record.

The first speaker was Roy Wilson, representing the fourth district of the Riverside County Board of Supervisors, a member of the governing board of the South Coast Air Quality Management District and a member of the Riverside County Transportation Commission. He asked for NHTSA's "approval in allowing Neighborhood Electric Vehicles and other slow-moving vehicles to operate on public roadways and to increase the maximum speed limit to 25 miles an hour." Supervisor

<sup>16</sup>The requirement for seat belts was replaced in September 1997 by a provision authorizing, but not requiring golf cart transportation plans to include a requirement for seat belts.

Wilson advised the panel that "you have a unique opportunity to provide leadership in an area of public policy which has both transportation and air quality ramifications and which directly addresses the lifestyle of our growing senior population." With respect to the golf car program, which was established when he was a member of the City of Palm Desert Council, Supervisor Wilson stated that

it has reduced congestion on city streets, provided affordable user friendly alternatives to transportation needs, and based on this experience as well as those in areas—programs that are similar in areas like Davis [California]; Sun City, Arizona and Lady Lake, Florida, I believe this program has tremendous potential.

Supervisor Wilson stated that favorable action by NHTSA

would expand the pool of electric vehicles which \* \* \* from an environmental, primarily air quality perspective, \* \* \* are also extremely beneficial. They do not emit toxins including carbon monoxide into the air.

He was followed by Ramon Diaz, the city manager of the City of Palm Desert. Mr. Diaz told the panel that "the golf cart program has been very successful \* \* \* Areas of the city that are being annexed in are asking us, 'When can we have our golf cart lanes? When can we begin driving our golf carts?'"

The next commenter, Commander Steven Bloomquist of the Palm Desert Section, Riverside Sheriff's Office, spoke "from a law enforcement perspective." Initially, there were concerns

about the mixing of slower moving vehicles with faster moving vehicles and also the size difference, mentioning the physics of the speed difference between golf carts and passenger vehicles and trucks and the like.

However, Commander Bloomquist had been reassured after his three year experience with the program:

To date \* \* \* we have not had any accidents involving the larger vehicles which move at a greater speed with the slower moving golf carts.

Assemblyman James F. Battin, Jr., represented by his district manager Kim Estock, addressed the importance of alternative transportation for senior citizens:

With a limited income comprised of social security and perhaps a small retirement fund, some seniors have been able to cut the cost of an automobile with insurance out of their budget altogether because of the option of using an electric vehicle with a one time purchase cost.

The California commenters were supported by those from Arizona, beginning with R. H. Stranger, regional

manager of Southern California Edison for Coachella Valley. Mr. Stranger was followed by David Bentler, Electric Transportation Project Manager for the largest electric utility in Arizona (Arizona Public Service Economic and Community Development). Mr. Bentler showed a video in which the affordability, accessibility, and utility of the NEV were promoted by the [unidentified] executive director of the homeowners association of Westport Village as well as by the Village's recreational office manager, Donna Highley, two Village residents, Joan and Larry Thomas, Jerry Unger, a director of the Sun City Homeowners' Association, and Ray Prendergast of the Sierra Club.

Arizona golf car dealer, Steve Pohle of Sun City, spoke in favor of allowing the vehicles he sells to use the public roads at speeds up to 25 miles per hour. He said that

(i) it is [a speed] that many of our customers obtain now with their golf carts and are doing it safely. I think the biggest advantage of that speed is the ability to be able to, after stopping at an intersection or wherever they are traveling, \* \* \* quickly maneuver out of the way of traffic.

The agency held another public meeting in Washington, D.C., on July 25, 1996. At that meeting, NGCMA indicated its objection to the requirement in the California statutes and in the City of Palm Desert plan for seat belts. NGCMA viewed the requirement as "antithetical to the personal safety of drivers and occupants of golf cars." The association thought that legislative bodies have "a very limited understanding of the physical limitations of the golf car as it presently is constructed and the consequent susceptibility for personal injury and even death, if seat belts were to be required." NGCMA apprised the panel of the industry's standard, ANSI/NGCMA Z130.1-1993. It presented reasons why the industry believed that a golf car should not be considered a "motor vehicle," i.e., it stated that golf cars are designed primarily for use on golf courses and not the public streets. The association noted that the industry does not equip golf cars with equipment that make them lawful for registration and use on the public roads. It argued that accordingly if an owner chooses to operate a golf car on the public roads, the manufacturer should not be penalized for it. NGCMA further stated that "(t)he maximum recommended speed for golf cars under ANSI/NGCMA Z130.1 is 15 miles per hour." In addition, it stated that "the golf car manufacturers believe that any speed in excess of 15 miles per hour begins to

approach problems with stability, and increases the risk of injury or death on account of the loss of stability and increased braking distance." (Transcript, July 25, 1996, p. 15)

Given NHTSA's developing interest, NGCMA asked that the agency consider the following:

- (1) Initiate steps to preempt all state and local regulation of golf cars on public roads \* \* \* until a thorough investigation and analysis has been made of the safety issues and optimum responses to these issues;
- (2) Mandate speed limits not to exceed 15 miles per hour for any golf car used on public streets and highways;
- (3) Solicit from the golf car manufacturers recommendations for safety accessories that might be utilized or recommended for golf cars whose owners desire to utilize their golf cars on public streets and highways;
- (4) Advise NGCMA of what additional signage or documentation, if any, should preferably be furnished golf car purchasers to ensure the purchaser understands the golf car was not manufactured for use on public streets \* \* \* and cautioning operators against such use unless the vehicle is equipped with whatever minimum requirements might be deemed appropriate by NHTSA;
- (5) Consider defining and regulating light-weight vehicles capable of being driven on public roads as \* \* \* NEVs, to distinguish NEVs from golf cars which are self-regulated pursuant to ANSI/NGCMA Z130.1. References to "golf cars" as such should be deleted from any state and federal laws and regulations dealing with motor vehicles.

Further, NGCMA said that NHTSA "needs to preempt state and local initiatives on this subject until NHTSA has clearly identified the safety issues and appropriate responses to these issues in a cautious and careful manner."

NHTSA had also asked for written comments from those who could not attend its public meetings. The commenters included representatives of state and local governments including law enforcement officials, manufacturers and users of NEVs and golf cars, representatives of utilities, a public interest group, and other interested persons. Specifically, written comments were received from Rep. Sonny Bono, and, in the order received, from Lois Wolk (mayor, City of Davis), J. Douglass Lynn (Lynn & Associates with a subsequent submission as well), Bombardier, Dr. Tim Lynch (Director, Center for Economic Forecasting and Analysis, Institute for Science and Public Affairs, Florida State University), the City of Palm Desert, Richard S. Kelley (president, Southern California Association of Governments, two comments by Mr. Thomas of Trans2

Corporation,<sup>17</sup> Jim Douglas (assistant director, Motor Vehicle Division, Arizona Department of Transportation, the written remarks of the NGCMA general counsel, several video tapes, Dr. James M. Lents (executive officer, South Coast Air Quality Management District), George Boal (resident of the City of Palm Desert), Marilyn D. McLaughlin (resident of the City of Palm Desert), David Guthrie (deputy director, Arizona Department of Commerce, Harry C. Gough (automotive engineering professional specialist, Connecticut Department of Motor Vehicles), Paul and Jacklyn Schlagheck (residents of Lady Lake, Florida), Dr. Gerald Donaldson (senior research director, Advocates for Highway and Auto Safety ("Advocates")), Jim Prentice (resident of Port St. Lucie, Florida), Paul Jackson Rice, Esq. (Arent, Fox, Kintner, Plotkin & Kahn), Sheriff Ralph E. Ogden of Yuma, Arizona, Lawrence Lingbloom (Sierra Club California), Cynthia Kelly, Esq., (government relations counsel, Golf Course Superintendents Association of America), the Board of Directors of the Palm Desert Country Club Association, Gerald W. ("Wally") Powell (reliability engineer, E-Z-GO Textron ("E-Z-GO")), Bob Doyle (assistant sheriff, patrol and investigations division, Riverside County Sheriff's Office), Wayne Balmer (community development director, Mesa, Arizona), and Marvin B. Jaques (vice president special projects, Ransomes American Corporation ("Cushman")), the manufacturer of Cushman utility vehicles.

In brief, the governmental authorities and the public supported the on-road use of electric golf cars and NEVs as addressing the public interest in a cleaner environment. Users noted approvingly the mobility that is afforded by the ability to use golf cars and NEVs on the public roads as an alternative to the passenger car for short in-town trips. These groups testified to the absence of any on-road safety problems involving golf cars and opposed any regulation by NHTSA that would curtail driving them on the public roads, or that would increase their costs. Golf car manufacturers objected to the possible classification of their products as "motor vehicles" and wished to remain free of Federal regulation.

#### *D. Regulatory Options Considered*

After considering the results of its survey of state and local locals and its

public meetings, the agency identified three options for responding to Bombardier's request. The first was to grant Bombardier's request to revise the agency's interpretive test for determining whether an on-road vehicle is a motor vehicle by raising the threshold top speed capability from 20 miles per hour to 25 miles per hour. This option had a number of drawbacks. If the agency had granted Bombardier's request, it would have placed LSVs beyond its regulatory reach. This would have been undesirable from a safety standpoint since, as noted above, there appeared to be a greater need for Federal action with respect to LSVs than with respect to slower vehicles. Further, by relinquishing its jurisdiction over these vehicles, NHTSA would have lost the flexibility to adjust its LSV regulatory actions in response to any changes in the safety record of those vehicles. Finally, this approach would have allowed the states to adopt differing requirements for the same aspects of safety performance, vitiating the intent of Congress that motor vehicles be subject to a uniform national set of Federal safety standards. For these reasons, NHTSA decided not to grant Bombardier's request.

The second option was to maintain the existing line of interpretations and vehicle classifications, under which all vehicles capable of being driven at speeds of more than 20 miles per hour, regardless of their configuration, size or weight, are treated as "motor vehicles" and are subject to the same safety performance requirements. But simply leaving the current interpretations and vehicle classifications in place effectively would have subjected LSVs to requirements they could not meet and thereby effectively prohibited the manufacture and sale of LSVs. Thus, this option would not be responsive to the growing public interest in using low-cost and low-speed 4-wheeled vehicles within limited operating environments.

The third option was for the agency to revise its existing system of vehicle classifications by creating a new class of vehicles comprising LSVs and applying to them new safety requirements that would be appropriate for and accommodate this emerging form of transportation while addressing its safety needs. Developing this option necessitated defining the new class of vehicles in such a way as to include the appropriate vehicles and exclude others. It appeared that standards applicable to current passenger cars could not, and need not, be applied in all aspects to LSVs, but it was not clear what standard should take their place. Moreover, since

LSVs had not entered the country's motor fleet in significant numbers, there were few crash and injury data on which to base a judgment about the extent and nature of the safety need.

Despite these challenges and uncertainties, the agency determined the third option to be the most prudent approach and accordingly used it as the basis for its proposal.

#### *E. 1997 Notice of Proposed Rulemaking*

Based on the information gathered through autumn of 1996, NHTSA developed a proposed regulation for LSVs, a new vehicle class including both NEVs and golf cars with a top speed between 15 and 25 miles per hour. Both types of vehicles have similar design and operational characteristics and are likely to have common safety problems. As such, NHTSA decided that the issues of the proper regulatory treatment for them should be considered together.

The basic jurisdictional issue was how to differentiate between golf cars that were manufactured exclusively for use on golf courses and those that are being permitted by states and municipalities to be operated as on-road vehicles. NHTSA tentatively decided to adopt a speed criterion to address this question. The industry's standard Z130.1, which applies to all golf cars, contains a specification for "Maximum vehicle speed "(paragraph 9.6.1) under which "(t)he average speed [of runs in opposite directions] shall not exceed 15 mi/h (24 km/h)" (paragraph 9.6.1.3). Further, NGCMA stated at the July 25, 1996 public meeting that its primary activity since its inception had been the promotion and sponsorship of standard Z130.1 and that 100 percent of its members adhered to it. Accordingly, the record before the agency at the time of its proposal indicated that if a golf car could go faster than 15 miles per hour, the maximum speed permitted by the industry standard for golf cars to be used solely on golf courses, the golf car was not only more likely to be driven on the public streets than slower golf cars, but was intended by its manufacturer to be so used. For these reasons, NHTSA chose a maximum speed capability of 15 miles per hour to distinguish between golf cars truly manufactured for exclusive golf course use, and faster golf cars that might properly be considered "motor vehicles" for purposes of Federal safety regulation.

In considering what safety equipment to propose requiring, NHTSA reviewed the requirements of the states and municipalities for golf cars to be used on the public roads, and found them

<sup>17</sup> After Trans2 submitted comments on the notice of proposed rulemaking in this proceeding, its assets were purchased by Global Electric MotorCars (GEM) of Fargo, North Dakota.

varied and sometimes unclear. The exception was the City of Palm Desert. The city requires "golf carts" offered for registration for on-road use to be equipped with headlamps, front and rear turn signal lamps, taillamps, stop lamps, rear side reflex reflectors, rearview mirrors, a parking brake, horn, windshield, and seat belts.

Since a Federal motor vehicle safety standard must be "reasonable, practicable, and appropriate" for the types of motor vehicles to which it applies, NHTSA reviewed the record to see whether imposition of the City of Palm Desert equipment requirements would be reasonable, practicable and appropriate for golf cars and NEVs. Steve Pohle had told the NHTSA panel at the meeting in the City of Palm Desert that Arizona requires street-legal golf cars to have head lamps, stop lamps, taillamps, a horn, and a rearview mirror. He added, "the majority of the [golf] cars I was speaking about are all equipped that way, so if they are using it on the street \* \* \* they are equipped that way. We also always equip them, although it's not required by the state, with a Plexiglass windshield." In reply to a question as to the difference in cost "between a cart equipped versus a cart not equipped," Mr. Pohle estimated "\* \* \* about \$400 if we're including the windshield which would be about \$115 of that." The NEV manufacturers represented that their vehicles would be manufactured from the start with all the equipment required by the City of Palm Desert.

Accordingly, NHTSA considered the requirements of the City of Palm Desert to be an appropriate basis for a proposed Federal safety standard for LSVs. It was reasonable and appropriate because NEVs were designed to comply from the start, and testimony indicated that the equipment was easily added to existing golf car designs. It seemed practicable because there was testimony that new vehicles could be equipped at reasonable cost. It addressed the need for safety because the experience of the City of Palm Desert had indicated that on-road safety problems were virtually nonexistent.

Therefore, NHTSA proposed that LSVs (defined in the proposal as golf cars with maximum speeds between 15 and 25 miles per hour, and all vehicles other than motorcycles and vehicles with work-performing equipment, with a top speed of not more than 25 miles per hour), be equipped with the same equipment required by the City of Palm Desert. (January 8, 1997; 62 FR 1077) There were several minor differences. First, NHTSA proposed that the windshield be of AS-1 glazing, the type

that is found in passenger cars. Second, NHTSA did not propose that LSVs be equipped with horns. No other FMVSS requires the installation of horns because motor vehicles were equipped with horns long before the first FMVSS was issued. NHTSA believed that LSV manufacturers would similarly incorporate horns as a matter of course. Third, the agency proposed to require a label indicating that LSVs should not be driven at speeds greater than 25 miles per hour on any road. NHTSA proposed that the new standard be designated "Standard No. 100."

#### *F. Summary of Comments on Notice of Proposed Rulemaking*

Over 100 comments were received from three major groups: elected national, state, and local officials; golf car manufacturers and dealers; and advocacy groups. (NHTSA's Docket Room has assigned a number to each comment. For example, the 20th comment is denoted "96-65-NO1-020." For simplicity, in discussing specific submissions in this preamble to the final rule, the agency uses only the last three digits to identify the comment, i.e., "020.")

##### 1. State and Local Officials; Utilities

State and local officials, with one exception, supported the proposal. These included Ralph E. Ogden, Yuma County (AZ) Sheriff's Office (002); Rollie K. Seebert, Maricopa County (CA) Sheriff (005); Richard S. Kelly, Mayor, City of Palm Desert (CA)(006); D.O. Helmick (California Highway Patrol (013); Dottie Berger, Commissioner, Hillsborough (FL) (014); Michael D. Branham, Assistant City Manager, Surprise (AZ)(015); Assemblyman Jim Battin (CA)(019); David Guthrie, Arizona Department of Commerce (021); Ted Hiding, Electric Transportation Manager, Arizona Public Service Economic Development Department (026); Lois Wolk, Mayor, Davis (CA)(027); L. Denno, California Highway Patrol (028); Nancy J. Deller, Deputy Director, California Energy Commission (036); Richard D. Lamm, former Governor, Colorado (056); Pamela Bass, Vice President, Southern California Edison (061); Robert H. Cross, Chief Mobile Source Control Division, California Air Resources Board (80); and Kirk Brown, Secretary, Illinois Department of Transportation (088).

The principal reasons for supporting the proposal were the enhancement of air quality that electric-powered LSVs would bring, and the importance of developing alternative forms of transportation. This was most cogently expressed by David Guthrie, Deputy

Director, Arizona Department of Commerce (021), who said:

NEV's \* \* \* provide an affordable, environmentally friendly alternative to gasoline powered automobiles that is consistent with our goal of promoting "cleaner" vehicles without hampering economic growth or putting undue financial burdens on our citizens. We believe the proposed rule is appropriate for three reasons. First, it allows local and state governments to continue to regulate the use of these vehicles, giving them the ability to set speed zones, require specialized lanes and establish other requirements as appropriate. Second, the draft rule [would require] manufacturers to equip LSVs with basic safety features like seat belts and mirrors. Finally, the rule sends a strong message to states that their alternative vehicle policies are being received with respect and support in Washington \* \* \*.

The one exception was C. I. MacGillvray, Director, Department of Engineering, Iowa Department of Transportation (022) who expressed concern "at the State level" for the changes "required to safely integrate these vehicles into legal operations on Iowa's public roadways," citing licensing of operators, registration of vehicles, financial responsibility, and the like.

#### *(B) Manufacturers and Dealers of Golf Cars and Neighborhood Electric Vehicles*

The two identified categories of vehicles that would be covered by the final rule are NEVs and golf cars. NEV manufacturers and dealers supported the proposed rule. Commenters included James M. Thomas, Vice President Sales and Marketing, Trans2 Corporation (007); Bombardier Corporation through its outside counsels Paul Jackson Rice and Lawrence F. Henneberger (008); Charles E. Towner, a franchised dealer of personal and low-speed community vehicles (AZ)(030); and Delmar C. Gilchrist, a Trans2 dealer (CA) (034).

The initial response of the golf car industry was to oppose the proposal. Comments were submitted by A. Montague Miller, president and CEO of Club Car, Inc. (011); the NGCMA general counsel (016); Gerald W. Powell, Reliability Engineer, E-Z-Go Textron, Inc. (017); Scott J. Stevens, President, Western Golf Car Manufacturing, Inc. (039); and Charles A. Fain, Vice President Design Engineering, Club Car, Inc. (043).

The principal objections to the proposed requirements for AS-1 windshields and for seat belts. The industry asked that an alternative windshield material (polycarbonate) be permitted because it "as well as other

transparent materials are more effective to provide shatterproof protection to occupants of golf cars." Seat belts were opposed in NGCMA's comments because they

may enhance the risk of injury or even death if the occupant is restrained in the vehicle by a seat belt assembly upon rollover \* \* \*. Golf carts are equipped with a standard hip or hand hold restraint located towards the outside of the seat. However, the hand hold does not prevent the occupant from jumping or leaping out of the golf car to avoid further injury if the golf cart is about to roll over. For this reason, \* \* \* in lieu of a seat belt requirement for golf cars, a hand hold or hip restraint should be required as set forth in ANSI/NGCMA Z 130.1.

The industry also objected to the proposed effective date of 45 days after the issuance of the final rule, saying that "a minimum of 24 to 36 months" would be required "to achieve the design and tooling required by the proposed standard." Finally, the industry submitted that

to properly comply with the seat belt FMVSS Standard No. 209, together with the other items to be required, the manufacturing cost to comply will exceed \$800 to \$1,000 per vehicle without regard to design and tooling expenditures approximating \$500,000 per manufacturer.

Golf car manufacturers and dealers apprised Members of Congress of their opposition to the proposal. As a result, letters of inquiry were received from a number of Senators and Representatives (see, e.g., comment 033, which was signed by six Representatives from Georgia).

### 3. Advocacy Organizations

NHTSA also received comments from a number of public interest or advocacy organizations. These included: Consumer Federation of America ("CFA")(001), Advocates for Highway & Auto Safety ("Advocates")(020), Sierra Club California (032), and Washington Legal Foundation ("WLF")(038).

Sierra Club California supported the proposed rule without qualification. It stated that

\* \* \* (i) it was happy to see the federal government is acting to form a consensus regarding the use of LSVs at the national and state levels. The Sierra Club California hopes that other states and municipalities will follow your lead in developing localized alternative transportation program consistent with this rule, and in consultation with the appropriate law enforcement and public safety agencies.

It stated further that "(a)s an alternative to automobiles, LSVs can reduce the number of trips by car and eliminate the need for cold starts, e.g., the first few minutes of operation where

the majority of toxic emissions are generated from gasoline-powered vehicles."

However, the other advocacy organizations were not in favor of the proposal. WLF opposed subjecting LSVs to safety performance requirements, arguing that "NHTSA has not shown that there is a problem that requires attention." It cites the preamble's statements that "there are virtually no accident data concerning [golf cars]" and "intuitively, it appears that passengers in LSVs might be at significant risk because of the small size and relative fragility of LSVs." In WLF's view, "NHTSA has not shown that any safety problem exists and has no justification whatsoever for implementing these costly and extensive regulations." WLF also argued that, given the alleged propensity of golf cars to roll over, the net effect of requiring seat belts could be to increase deaths and injuries.

On the other hand, Advocates and CFA opposed allowing the manufacture and sale of a class of passenger vehicles subject to a lesser set of safety performance requirements than those applicable to passenger cars. Advocates opposed allowing "a new class of motor vehicles on public roads which are unable to protect their occupants in crashes up to 25 mph." Advocates argued that the agency had not provided any documentation of the current on-road crash experience of golf cars, that the agency had not adequately examined the regulatory and safety record of allegedly similar vehicles in Japan and France, that there was no agency plan to organize the collection, retrieval and analysis of LSV crash data, and that pressure for inexpensive transportation and claims of environmental benefit would inevitably lead to the designing and marketing of LSVs that are increasingly car-like and to future requests for the agency to increase the upper speed threshold for LSVs. CFA, too, thought that safety problems would arise with the advent of a new, small class of vehicles, and recommended that all vehicles with a maximum speed of 15 miles per hour or more be required to meet all Federal motor vehicle safety standards.

### 4. Other Commenters

A number of additional comments were submitted by other persons, some of them supporting the proposal, others opposing it.

Dr. Tim Lynch, Director, Center for Economic Forecasting and Analysis, Florida State University, concluded that promotion of electric vehicles would

lead to fuel savings and would benefit the environment (023).

Kevin Breen, Chair of the SAE Special Purpose Vehicle Committee, apprised the agency of SAE Standard J2258, *Light Utility Vehicles*, issued in 1996, and draft SAE J2358, *Closed Community Vehicles*. The light utility vehicles covered by SAE Standard J2258 are off-highway vehicles 72 inches or less in overall width, with a gross vehicle weight rating (GVWR) of 5,000 pounds or less and a maximum design speed of less than 25 miles per hour. The standard specifies requirements for "elements of design, operation, and maintenance." The Committee is studying "the use of golf-car based vehicles for closed community applications," with attention to "issues such as braking, lighting, crashworthiness, stability, etc." In his opinion, NHTSA's proposed standard is inappropriate because

1. The standard permits vehicles to be operated in an on-highway situation in a traffic mix with typical highway vehicles without adequate consideration for braking, crashworthiness, etc.

2. The proposed requirements for seat belts in an open vehicle are contrary to current occupant protection technology relating to open vehicles (i.e., motorcycles, snowmobiles, etc.).

\* \* \* \* \*

4. The exemption of certain "work class" vehicles from this standard opens acceptance of their use in a highway situation creating a potential hazard for both the users of those vehicles and the general motoring public who may interact with them.

5. The standard as currently drafted includes too broad of a scope of vehicles. If adequate data exists, rulemaking could be limited at this time to NEVs. Vehicles such as golf car or golf-cart based vehicles should not be considered in proposed FMVSS 100 at this time.

Two residents of Ypsilanti, Michigan questioned the wisdom of NHTSA's action (003, 004). Manufacturers of vehicles that are not "motor vehicles," as that term is interpreted by NHTSA, wanted reassurance that their products would not inadvertently be included in the new rule (Truck Manufacturers Association (009), Toro (012), and Industrial Truck Association (024)). The American Insurance Association claimed that NHTSA's action is an "abuse of discretion" because the agency lacks authority to dilute safety regulations and increase crashes, deaths and injuries. That organization argued further that the proposal was "arbitrary and capricious" because the agency lacks sufficient crash data to enable it to make reasonable projections about the safety record of LSVs. (010)

Other commenters were concerned with specific aspects of the proposed equipment. Transportation Safety Equipment Institute argued that performance requirements should be specified for LSV lighting devices (018). George Ziolo thought that LSVs should have a flashing amber light at the rear or on the top as a low-speed warning (040). SMV Technologies sent examples of a warning triangle which some states require be affixed to farm tractors using the public roads, and recommended that LSVs be similarly equipped (068).

### G. Post-Comment Period Comments and Information

#### 1. Manufacturers and Dealers of Golf Cars; Members of Congress

Although the comment period closed on February 24, 1997, a substantial number of comments were received after that date. Many of them were letters from Members of Congress on behalf of golf car manufacturers, dealers, and users. The letters from the Members of Congress, as well as the letters from the parties on whose behalf they were writing, typically expressed many of the same concerns, e.g., concern that the proposal would regulate fleet and personal golf cars, that requiring seat belts in golf cars might increase danger in a rollover, and that AS-1 windshields would not be sufficiently protective against golf balls.

In an August 12, 1997 letter, NGCMA submitted suggested revisions to the agency's proposed standard. (NGCMA, 073) NGCMA suggested that personal golf cars be defined as vehicles that may carry golf equipment and have a maximum speed greater than 15, but less than 20 miles per hour. It suggested that personal golf cars be regulated in the same fashion as LSVs, except that personal golf cars would not be required to have seat belts. Further, NGCMA suggested that personal golf cars and any other LSV be permitted to have a windshield of "shatter resistant polymer" instead of AS-1 glazing.

In a December 22, 1997 letter, NGCMA informed NHTSA its members were amendable to equipping personal golf cars with all of the proposed items of equipment, with two exceptions. NGCMA asked that its members not be required to install seat belts and that they be given a choice between using AS-1 glazing or shatter resistant polymer for the windshield. It indicated that an effective date of from six to twelve months after publication would be acceptable, provided that its suggestions about seat belts and windshield glazing were adopted by the agency. (NGCMA, 104). In the letter,

that organization reaffirmed its desire to limit the top speed of personal golf cars to 20 miles per hour and indicated that the industry does not manufacture personal golf cars which have a higher top speed.

During February 1998, the agency received letters from over 30 commenters who identified themselves, generally, as dealers of golf carts and such other products as watercraft and motorcycles. All said that the issuance of a final rule was necessary for their livelihood and asked NHTSA to issue it immediately. These letters unqualifiedly supported the proposal, without stating any reservations about to the proposed requirements for windshields and seat belts.

In March 1988, over 30 dealers and distributors of Club Car golf cars informed NHTSA that if the agency limited the seat belt requirement as requested by NGCMA in its December 1997 letter, they would not oppose the issuance of an LSV final rule. (March 20, 1998 letter from Eileen Bradner, Counsel to Club Car, Inc.)

#### 2. Other sources

In February 1998, NHTSA obtained from the Consumer Product Safety Commission (CPSC) data concerning injuries and deaths involving golf car occupants. This information covers all types of golf cars, and all uses (on and around golf courses and on streets and highways).

CPSC provided the agency with information from four different sources:

- A summary of incidents and national estimates for injuries involving golf cars from the National Electronic Injury Surveillance System (NEISS) for the years 1993 to 1997. NEISS is comprised of a sample of hospitals that are statistically representative of hospital emergency rooms nationwide. From the data collected, estimates can be made of the numbers of injuries associated with consumer products and treated in hospital emergency departments.

- A printout of crash investigations involving golf cars, conducted by CPSC on-site or by telephone. This information is obtained from NEISS files, newspaper clippings, consumer complaints and Underwriters Laboratory.

- A printout of reported incidents involving golf cars. The reports are obtained from CPSC's Medical Examiners and Coroners Alert Program (MECAP), Underwriters Laboratory, American Trial Lawyers Association, Consumers Union, and newspaper clippings.

- A printout of death certificates in which a golf car was mentioned. CPSC has contracts with all 50 State Health Departments to provide information about death certificates that mention the use of certain products, including golf cars.

The agency notes that there are limits to the conclusions that can be drawn from these data for the purposes of this rulemaking. First, only the data from the first of these four sources can be used to make national projections about the size of health significance of the operation of golf cars. Second, much of the CPSC data relate to incidents that occurred when golf cars were being operated on a golf course or in other off-road situations.

During March 1998, NHTSA's Vehicle Research Test Center (VRTC) conducted a study of a Bombardier NEV, a Global Electric MotorCars NEV, and a Yamaha golf car. As described in the study report, the study was intended to provide the basis for an evaluation of the potential stability of LSVs on public highways and the safety potential of these vehicles in a crash. VRTC examined the vehicles with respect to seat belts, stability, stopping distance, electrolyte spillage, and glazing, and subjected them to braking and dynamic handling tests. The seat belts on the NEVs were deemed to be anchored to adequate structure. The golf car had no seat belts. Regarding stability, the study concluded that an LSV with a static stability factor below 1.0 with two occupants could probably tip easily in a tight turn at 20 mph. As for stopping distance from 20 miles per hour, the Bombardier NEV easily passed the requirements of FMVSS No. 135, *Passenger Car Brake Systems*, while the Global Electric MotorCars NEV passed marginally. The golf car could not meet these requirements. With respect to the issue of electrolyte spillage in a crash or rollover, it was noted that the Bombardier NEV appeared to be capable of shielding the occupants from the batteries so long as the fiberglass shell was intact. The other NEV did not have the batteries shielded from the occupant area. The golf car was gasoline-powered. VRTC also conducted impact tests on windshield glazing, which is discussed in some detail below under "Safety Engineering Issues."

In April 1998, NHTSA asked the City of Palm Desert for an update on the implementation of its plan. In the 21 months since the agency's public meeting in July 1996, the number of golf carts registered for use under the plan rose from 193 to approximately 250. Two crashes have occurred since then, although neither caused an injury. The

first crash occurred when the driver of a conventional car turned the corner and hit a golf car that was being illegally driven in the pedestrian crosswalk. In the second crash, a golf car operator had left the City of Palm Desert plan area and was struck just over the border of the next town, Indian Wells, when the golf car turned into the driveway of a country club. As noted in the NPRM, the only crash that occurred between 1993 and 1996 involved the overturning of a golf car being operated by joy-riding teenagers.

#### IV. Final Rule and Resolution of Key Issues

##### A. Summary

The final rule establishes a new class of 4-wheeled vehicles, called LSVs, and excludes them from passenger car class. LSVs are 4-wheeled vehicles, other than trucks, whose maximum speed exceeds 20 but is not greater than 25 miles per hour. By removing them from the passenger car class, the rule relieves manufacturers of LSVs of the need they would otherwise have of complying with the full range of FMVSSs for those classes and substitutes Standard No. 500 as the only applicable FMVSS. With the exception of the warning label, which was not adopted, LSVs are required to have all the safety features and equipment proposed in the NPRM, including seat belts, plus two additional items added in response to comments: a VIN, and a reflex reflector on the rear. However, as an alternative to an AS-1 windshield, an AS-5 plastic windshield may be used.

##### B. Authority and Safety Need for this Final Rule

NHTSA was presented with a variety of arguments regarding its authority to regulate low-speed vehicles. WLF raised questions whether the vehicles covered by the agency's proposal are motor vehicles. That organization also argued that issuing the final rule would not promote safety because there is no safety problem to be addressed. Conversely, Advocates and CFA argued that excluding small vehicles from the FMVSSs will create a safety problem. AIA and Advocates stated that the agency had not adequately gathered and considered relevant data prior to issuing the proposal, citing agency statements about the dearth of data on LSV crashes and about the foreign experiences with small vehicles.

##### 1. Low-Speed Vehicles are Motor Vehicles

Title 49 U.S.C. Chapter 301 grants NHTSA regulatory authority over

"motor vehicles." A "motor vehicle" is defined as a vehicle "manufactured primarily for use on the public streets, roads, and highways" (Sec. 30102(a)(6)). As noted above, NHTSA's principal interpretation of the definition of "motor vehicle" dates from 1969, and addressed the status of mini-bikes. NHTSA said that if a type of vehicle is physically capable of being operated on the public roads and if a substantial portion of the users of those vehicles uses them on the road, those vehicles are motor vehicles, without regard to the intent of the manufacturer. It bears repeating that the agency said that perhaps the most important criterion to be used in resolving borderline cases

\* \* \* is whether state and local laws permit the vehicle in question to be used and registered for use on public highways. The nature of the manufacturer's promotional and marketing activities is also evidence of the use for which the vehicle is manufactured.

a. *Speed-modified golf cars are motor vehicles.* Not only are speed-modified golf cars whose top speed is between 20 and 25 miles per hour fast enough to be capable of being used on roads with low-posted speed limits, but also their operation on public roads is commonplace.<sup>18</sup> (See the testimony regarding their on-road use in Arizona at the agency's first public meeting.) Further, much of the on-road use is not incidental to the playing of golf. Instead, many trips are made for purposes unrelated to golf, such as shopping or visiting friends. The agency notes that Club Car, one of the larger manufacturers of golf cars, stated that the market for and use of personal golf cars are largely limited to the states and local jurisdictions that permit the on-road use of golf cars. NHTSA believes that it is reasonable to conclude that the market for speed-modified golf cars is similarly limited, and that virtually all users of those vehicles use them on the road.

Although the agency does not regard the question of whether speed-modified golf cars are motor vehicles to be a borderline one, the agency notes that even if it were, those vehicles meet several of the key criteria considered by the agency in borderline cases. As noted above, 12 states authorize their local governments to permit general purpose use of golf cars on designated roads and another four permit more limited on-road use. A majority of those states require either that the golf cars be

<sup>18</sup>Indeed, it is possible that the very modifications that are made to enhance on-road performance could render speed-modified golf cars unsuitable for golf course use if their low speed torque is increased too much. Excessive torque could damage the turf on golf courses.

registered or that the user have a driver's license, or both. The modifiers of these vehicles do not label these vehicles as being not manufactured for on-road use. Quite the contrary, they equip them with the equipment required by states and local jurisdictions for on-road use. Further, their top speed capability is far above the maximum average permissible speed specified in the voluntary industry for golf cars intended exclusively for use on golf courses. Finally, they advertise the top speed capability of their vehicles. Since driving these golf cars at or near their top speeds on golf courses is presumably impermissible and since their on-road use is commonplace, such advertising is tantamount to advertising them for on-road use.

b. *Neighborhood Electric Vehicles are Motor Vehicles.* The agency begins its analysis of whether NEVs are motor vehicles by noting that neither of the two current NEV manufacturers contest that NEVs may properly be regarded as motor vehicles under the Vehicle Safety Act. The agency's analysis is essentially the same as that for speed-modified golf cars, except that since only a few NEVs have been sold in this country, the agency must base its analysis for NEVs on their anticipated marketing and use. Not only are NEVs fast enough to be capable of being used on roads with low-posted speed limits, but also they are expected to be used extensively for that purpose. It is further anticipated that much of the on-road use will not be incidental to the playing of golf. NHTSA believes that it is reasonable to conclude that the market for NEVs will be limited to the states and local jurisdictions that permit the on-road use of golf cars or NEVs, and that virtually all users of those vehicles will use them on the road.

As in the case of speed-modified golf cars, the agency does not regard the question of whether NEVs are motor vehicles to be a borderline one. Nevertheless, the agency notes that even if it were, those vehicles meet several of the key criteria considered by the agency in borderline cases. 12 states authorize their local governments to permit general purpose use of golf cars and/or NEVs on designated roads and another four permit more limited on-road use. A majority of those states require either that the golf cars or NEVs be registered or that the user have a driver's license, or both. As originally manufactured, these vehicles are equipped with the safety devices and features required by states and local jurisdictions for on-road use. Further, their top speed capability is far above the maximum average permissible speed

specified in the voluntary industry for golf cars intended exclusively for use on golf courses. While both NEV manufacturers provide a device that can be used to reduce vehicle speeds to levels appropriate for golf course use, that device is available from one of the manufacturers only as an item of optional equipment. Finally, the two NEV manufacturers advertise their vehicles for on-road use.

2. The Agency Has Authority to Regulate Anticipated as well as Current Safety Problems

In response to WLF's argument, NHTSA observes that its authority is preventive in nature. Congress has charged it with issuing standards to protect the public against "unreasonable risk" of crashes and of deaths and injuries resulting from crashes. 49 U.S.C. 30102(8) and 30111(a). This means that the existence of a risk is sufficient to justify the issuance of standards. If the occurrence of deaths and injuries is reasonably anticipated, NHTSA need not wait until they actually begin to occur in large numbers before taking action to prevent them.

3. Issuance of this Rule Appropriately Addresses an Anticipated Safety Problem

a. *Crash Data Show a Limited Safety Problem Involving the On-Road Use of Fleet and Personal Golf Cars.* Crash data have become available since the NPRM showing that although deaths and serious injuries resulting from the on-road use of golf cars are not numerous, they are occurring. NHTSA's Fatal Analysis Reporting System (FARS) is a

census of all fatalities and fatal crashes occurring on U.S. roads open to the public and resulting in the death of an occupant or nonmotorist within 30 days of the crash. FARS has records of nine deaths of golf car occupants on the public roads from 1993 to February 1998.<sup>19</sup> Three of the deaths occurred in Arizona, three in North Carolina, one each in California, Florida and Iowa. Eight of the nine deaths resulted when the golf car collided with a car or truck. The ninth occurred when the golf car ran off the road and its occupants were ejected. Data from CPSC include an additional seven deaths in on-road crashes not included in FARS, implying a total of 16 fatalities over a 5-year period. The city that has recorded the most deaths appears to be Sun City, Arizona. According to an Associated Press story dated March 12, 1998, there had been four deaths in golf car crashes in Sun City since 1995.<sup>20</sup>

In addition, NHTSA obtained data from CPSC regarding injuries and deaths involving the operation of golf cars. This information covers all types of golf cars, and all uses (on and around golf courses, as well as on public streets and roads). CPSC provided the agency with four different sources of information about golf cars. Three of these were relevant:

1. *A printout of reported incidents involving golf cars.* The reports are obtained from CPSC's Medical Examiners and Coroners Alert Program, Underwriters Laboratory, American Trial Lawyers Association, Consumers Union, consumer complaints, and newspaper clippings, and are not statistically reliable for national

estimates. The reported incident data set included 19 on-road incidents between 1993 and February 1998, 14 of which were fatalities. All 9 of the FARS cases were included in these 14 cases. These fatalities mostly occurred when the golf car collided with a passenger car or light truck on roadways.

2. *A printout of death certificates in which a golf car was mentioned.* CPSC has contracts with all 50 State Health Departments to provide information about death certificates that mention the use of certain products, including golf cars; however, not all states reported during the entire period. The Death Certificate file reported 3 on-road fatalities involving golf cars during the period 1993 to February 1998. One of these cases was included in the 14 cases mentioned above and 2 were not. Thus, there are a total of at least 16 on-road fatalities to occupants of golf cars during the period 1993 to February 1998.

3. *A summary of incidents and national estimates for injuries involving golf cars from the National Electronic Injury Surveillance System (NEISS) for the years 1993 to 1997.* These data are a compilation of information derived from reports of product-associated injuries treated in hospital emergency departments that participate in the National Electronic Injury Surveillance System. The NEISS estimates are calculated using data from a probability sample of hospitals with emergency departments located within the United States and its territories.

The following table presents incidents for "golf carts" reported by CPSC's NEISS during the years 1993-1997:

NEISS REPORTED INCIDENTS  
[1993-1997]

Type of injury	1993	1994	1995	1996	1997	5 year total
Pedestrian injury .....	36	19	18	16	30	119
Off-road injury .....	96	138	145	146	168	693
On-road injury .....	3	4	5	5	6	23
On-road fatality .....	1	0	0	0	0	1
Rollover injury .....	4	4	8	4	7	27
Ejection injury .....	26	17	14	11	12	94
Total <sup>21</sup> .....	100	142	149	161	174	726

<sup>21</sup> The figures in the columns are not additive because some injuries fit into more than one category.

Based on the data in the above table, the agency has estimated the total national injuries associated with "golf carts" of all types and uses (i.e., on-road as well as on golf courses) to be 6,372,

6,808, 7,603, and 7,218 for the years 1993 through 1996.

The agency estimates that there were an average of 222 on-road golf car injuries per year over the 5-year period. This injury estimate is calculated as

follows: 7,000 injuries (national annual injury average for 1993-1998) × 23 (on-road or vehicle-involved injuries) / 726 (NEISS reported incidents 1993-1997) = 222 annual average of national injuries.

<sup>19</sup> Although designed to be a census of all traffic fatalities, FARS does not contain all of the on-road golf car fatalities reported by CPSC to NHTSA. The

submissions from CPSC include information on an additional seven deaths.

<sup>20</sup> This number was confirmed in a June 3, 1988 telephone conversation with Detective Jeffrey

Childs of the Maricopa County Sheriff's Department.

There is only 1 fatality involving a golf car in the 5 years of NEISS data. However, based on the reported incident and death certificate data provided to NHTSA, there were 16 on-road golf car fatalities over a 5-year period, an average of 3 fatalities per year.

NHTSA anticipates that the number of on-road serious injuries and deaths involving occupants of fleet and personal golf cars will grow with the growth in number and speed of the same or similar vehicles on the road. The number of golf cars operated on public roads is currently limited. As more state legislatures authorize their

local jurisdictions to designate public roads for use of low-speed vehicles and other vehicles, and especially as more local jurisdictions use that authority, the sale and use of low-speed vehicles will increase. Further, to the extent that NEV manufacturers are successful, it seems likely that golf car manufacturers will respond to that competition by intensifying their efforts to sell personal golf cars whose top speed is between 15 and 20 miles per hour.

*b. The States Have Adopted Laws Requiring Safety Equipment on Fleet and Personal Golf Cars Used on Public Roads.* The majority of the 12 states that have enacted legislation permitting all-

purpose on-road use of golf cars and/or NEVs believe that there is a need for safety requirements and have taken steps to satisfy that need. Nine of those 12 states have mandated that those vehicles have specified safety equipment if they are used on-road and a tenth state authorized its local governments to adopt safety requirements. (See the table below.) Further, in their comments on the NPRM, state officials in California, Arizona, and Iowa indicated that they believe that the issuance of Federal safety requirements is warranted.

STATES PERMITTING ALL-PURPOSE GOLF CAR TRIPS ON PUBLIC ROADS WITHIN JURISDICTION OF LOCAL GOVERNMENTS

State	Roads on which operation is permitted	Required safety equipment
California .....	On private and public roadways designated by local government.	Local government may require safety devices. Headlamps, taillamps, reflectors, stop lamps, and brakes for nighttime operation.
Nevada .....	On public roadways designated by local government .....	Headlamps, taillamps, reflectors, stop lamps, mirror, brakes and an emblem placard for slow moving vehicles.
Arizona .....	On roadways with posted speed limit of 35 mph or less .....	Headlamps, taillamps, reflectors, stop lamps, mirror, brakes, and a notice of operations and restrictions in full view of driver.
New Mexico .....	On private and public roadways designated by local government. Carts may not be operated on state highways.	An emblem placard or flashing yellow light for slow moving vehicles is required.
Colorado .....	On private and public roadways designated by local government.	Headlamps, taillamps, reflectors, stop lamps, mirror, and brakes.
Wyoming .....	On public streets and roadways designated by local government.	Local government may require safety devices.
Illinois <sup>22</sup> .....	On roadways designated by local governments .....	Steering apparatus, rearview mirror, front and rear red reflectorized warning devices, slow moving vehicle emblem, headlight, brake lights and turn signals
Minnesota .....	On roads designated by local government .....	Slow moving vehicle emblem and a rear view mirror.
Iowa .....	On private and public roadways designated by local government. Carts may not be operated on primary roads.	Slow moving vehicle emblem, bicycle safety flag, adequate brakes. Local government may require other safety equipment.
Florida .....	On private and public roadways designated by local government and in self-contained retirement communities.	Efficient brakes, reliable steering apparatus, safe tires, rearview mirror, and red reflectorized warning device in front and rear. Headlamps, taillamps, and stop lamps for nighttime operation.
Georgia .....	On private and public roadways designated by local government.	None.
Texas .....	On private and public roadways designated by local government.	None.

<sup>22</sup> Passed by legislature May 6, 1998; sent to Governor June 4, 1998.

*c. There is a similar, but greater anticipated safety problem involving low-speed vehicles.* Largely because of their greater speed, the potential for growth in the numbers of LSVs, and in the number of deaths and serious injuries associated with LSVs, is even greater. NHTSA anticipates that sales of LSVs will steadily grow and that, as a result, there will be increased exposure leading to increased numbers of serious injuries and deaths. While the number of LSVs is limited now, it will grow, particularly with the introduction and sale of NEVs. To the extent that the NEV market expands, existing NEV

manufacturers will be induced to make further improvements to increase consumer appeal and new manufacturers may be induced to enter the market. The product improvements resulting from this competition will likely boost sales further. Further, to the extent that NEV manufacturers are successful, new manufacturers of speed-modified golf cars may be induced to enter the market. Since LSVs will likely be faster than most of the sub-25 mph vehicles on the road during 1993-1997, the crash forces of single and multiple vehicle crashes involving LSVs will tend to be greater than the crash forces

in those 1993-1997 crashes. As a result, the LSV crashes will be more likely to result in serious or fatal injuries to their occupants. Further, the higher speed of an LSV, while enabling a driver to pass through risky driving situations more quickly, may also induce a driver to take risks in more situations.

*d. This rule requires safety equipment on low-speed vehicles consistent with their characteristics and operating environment.* Advocates and CFA were concerned about the risk to safety posed by a growing class of small vehicles and argued that NHTSA's actions are contrary to its statutory mandate

because they will exacerbate the risk. Their concern related to the potential for crashes involving small vehicles such as LSVs and larger ones that may be sharing the same roadway, and the threat that this poses to occupants of LSVs.

NHTSA has carefully reviewed their argument about the effects of this rulemaking. LSV safety, and thus the need for FMVSSs for LSVs, will be determined by the combination of three factors: vehicle design and performance; operator training and ability; and the operating environment. The agency believes that Standard No. 500, in combination with a limited operating environment and appropriate operator training and ability, will appropriately address the safety needs of LSV users.

With respect to the LSV itself, the safety goal is that the vehicle have crash avoidance and crash protection characteristics appropriate for its speed and size, and its operating environment. Seat belts will afford protection against ejection. In the mixed motoring environment that will result when LSVs are introduced, crash avoidance will become all the more important. The small LSV must be easily detectable by drivers of larger vehicles. The requirements for lamps and reflectors should enhance the conspicuity of LSVs. Further, the LSV must have sufficient capability to move out of the way of faster traffic. LSVs designed to travel at speeds approaching 25 miles per hour will give them greater ability than fleet and personal golf cars to maneuver in and out of on-road situations that threaten them, e.g., when passing through an intersection after stopping at a stop sign or when turning left across lanes for oncoming traffic.

With respect to the operator, the safety goal is that the driver be familiar with the operating characteristics of the LSV so that he or she may drive appropriately to minimize the possibility of rollover, or hitting a pedestrian or other vehicle. States can contribute to driver safety by requiring LSV operators to be licensed.

The driving environment should be appropriate to the vehicle and its characteristics. Limitation of LSV use to low-speed city and suburban streets is necessary, but not eliminate the safety risks. In this regard, the agency notes that there have been four fatalities in golf car crashes in Sun City, Arizona. Conversely, none have occurred in the City of Palm Desert.

There are a number of possible reasons for the reported different safety records of these two cities. A very large difference in the number of golf cars used on-road may be one reason.

Approximately 6,000 golf cars are driven on the roads of Sun City, while the number of golf cars registered for on-road use in City of Palm Desert is only approximately 250. Also, neither Arizona nor Sun City requires all of the safety equipment (e.g., seat belts) that the City of Palm Desert requires.

Still another reason may lie in the different operating environments in the two communities. The City of Palm Desert has a more controlled environment than Sun City for golf car use. The City of Palm Desert permits on-road use of golf cars in the same lanes as passenger cars and other larger motor vehicles in speed zones posted for speeds up to 25 miles per hour. In speed zones posted for speeds over 25 miles per hour, golf cars may be operated on-road only if there is a lane designated for their use and if the golf car is, in fact, operated within that lane. By contrast, NHTSA understands that Sun City, under state law, allows golf cars to operate in the same lanes as larger traffic on any road with a maximum speed of 35 miles per hour.

NHTSA recognizes that not all operating environments may be as controlled as that of the City of Palm Desert. The agency encourages other states and municipalities to study the features of the City of Palm Desert's plan, and to adopt those features to the extent practicable.

#### 4. The Agency Has Appropriately Considered the Experience of Foreign Small Vehicles

In the NPRM, the agency noted that small, but generally higher speed passenger vehicles were being marketed in Japan ("kei" cars) and France (Voiture Sans Permis (VSP) and Tricycles et Quadricycles a Moteur (TQM)). Within the limits of its knowledge at the time of the NPRM, the agency described the physical attributes of these vehicles and some of the operating limitations.

Advocates responded to this discussion in the NPRM by arguing that the agency had not adequately considered these foreign experiences with small vehicles. Since the NPRM, the agency has obtained additional information regarding both kei cars and the French voitures. The limits on length, width and engine displacement of kei cars have been steadily eased over the last 20 years. Limit on engine displacement has increased from less than 360 cc prior to 1976, to less than 550 cc in 1976, to less than 660 cc in 1990. Length limits have increased slightly, from approximately 3.2 m in 1976, to 3.3 m in 1990 to 3.4 m in October 1998. Width limits have slightly

increased from less than 1.4 in 1976 to less than 1.48 in October 1998.

NHTSA is also aware that the safety requirements for kei cars have been steadily increased in the 1990's. Beginning in 1994, frontal crash protection requirements had to be met by kei cars at 40 km/hr and by passenger cars at 50 km/hr. Those requirements are a HIC not greater than 1000, thorax acceleration not greater than 60g and femur load not greater than 10kn. The test speed for the frontal crash protection requirements will become the same (50 km/hr) for kei cars and passenger cars in October of this year, when the most recent increases in kei car length and width become effective.

As for the two classes of voitures in Europe, the agency has learned that the European Union (EU) issued a directive last year harmonizing laws in EU for mopeds, auto-cycles, motorcycles and motorized tricycles and quadricycles ("voitures") with respect to tires, lighting, signaling, mirrors, fuel tanks, seat belts, and belt anchorages, washers, wipers, and demisters. Under the directive, a voiturette approved in one European country is automatically marketable in all 14 other member states.

The critical point, however, concerning the Japanese kei cars and the faster class of voitures is that they are not similar to LSVs and their experiences are not directly relevant. Their operating characteristics and environment are so different from those of LSVs that the experiences of those foreign cars are not predictive of the experiences of LSVs. The kei cars and TQM voitures can travel at approximately twice the speed of LSVs and have a much longer operating range. Further, their operating environment is not nearly so restricted by law as that of LSVs.

#### C. Safety Engineering Issues

There were a number of issues involving scope of the standard and the equipment that would be required.

##### 1. Speed Range of Motor Vehicles Subject to This Standard.

a. Minimum Threshold of 20 Miles Per Hour. The NPRM proposed to regulate golf cars with a top speed range of 15 to 25 miles per hour, and other 4-wheeled motor vehicles, other than vehicles with work-performing equipment, with a top speed of up to 25 miles per hour.<sup>23</sup> The final rule applies to a smaller group of vehicles, i.e., 4-wheeled motor vehicles, other than

<sup>23</sup> Motorcycles are already subject to a variety of FMVSSs.

trucks, with a top speed of 20 to 25 miles per hour.

In issuing the NPRM, NHTSA did not intend to regulate conventional golf cars. To carry out that intent, the agency proposed to include only those vehicles whose maximum speed exceeded 15 miles per hour. That speed was selected on the basis of information indicating that fleet and personal golf cars had a maximum speed of 15 miles per hour. As noted above, standard Z130.1, the industry standard for golf cars to be "used solely on golf courses" (paragraph 1.1), contains a specification for "Maximum vehicle speed" (paragraph 9.6.1). That specification states that when a golf car is operated on a straight track at maximum speed, once in either direction, the "(t)he average speed [of the two runs] shall not exceed 15 mi/h (24 km/h)" (paragraph 9.6.1.3). Accordingly, the agency tentatively concluded that if a golf car had a top speed greater than 15 miles per hour, that capability evidenced an intent that the golf car be operated on the road as well as on golf courses. Further, NGCMA stated at the July 25, 1996 public meeting that "100 percent" of the golf car manufacturers adhered to the standard. This statement led the agency to believe that virtually all fleet and personal golf cars met the industry standard.

The submissions by the golf car industry after the NPRM contained significant new information. While the pre-NPRM information represented the annual fleet of new golf cars as an essentially homogeneous, undifferentiated collection of vehicles, the post-NPRM information drew distinctions between a variety of subgroups within the new golf car fleet. One distinction was made between fleet golf cars and personal golf cars. Another and more important distinction was made between the vast majority of golf cars that have a top speed of about 12 miles per hour versus the much more limited, but not insignificant number of golf cars that have a top speed of 15–20 miles per hour.<sup>24</sup>

In its February 1997 comment on the NPRM, Club Car, the second largest member of NGCMA, confirmed that it produces personal golf cars whose top speed is between 15 and 20 miles per hour. It did not specify, however, the

percentage of its personal golf cars with that top speed. Further, Club Car gave no indication in that comment that it produced any fleet golf cars with such a top speed. However, in response to this agency's May 1998 inquiry about the percentage of fleet and personal golf cars with a top speed above 15 miles per hour produced by each of the major NGCMA members, NGCMA stated in a telephone conversation on June 3 that 1 percent of Club Car's fleet golf cars, and 75 percent of its personal golf cars, have a top speed between 15 and 20 miles per hour. None of the other large members produce any golf cars with such a top speed. Prior to that conversation, NGCMA had not explicitly stated that any of its members currently produce golf cars exceeding 15 miles per hour. However, NGCMA did suggest in its post-NPRM submissions that personal golf cars be defined as having a top speed between 15 and 20 miles per hour and explicitly stated that none of its members are now manufacturing personal golf cars capable of exceeding 20 miles per hour.

In light of this new information and on further consideration, the agency has decided to limit the application of Standard No. 500 to vehicles whose top speed is between 20 and 25 miles per hour. This decision carries out the agency's original intent of excluding virtually all conventional golf cars from the standard.

The agency believes that 20 miles per hour is a better dividing line between vehicles designed for use on the golf course and vehicles designed for on-road use. The conventional golf cars whose top speed is between 15 and 20 miles per hour have a body and understructure very similar to that of conventional golf cars whose top speed is less than 15 miles per hour. Further, while the speed differential between those two groups of golf cars creates a significant difference in their potential crash energy, the energy in the 15 to 20 mile-per-hour range is still modest compared to that of LSVs. As noted above, golf cars with a top speed of less than 15 miles per hour reportedly have a top speed of about 12 miles per hour. Those golf cars with a top speed between 15 and 20 miles per hour are believed by the agency to have a top speed of approximately 17 to 18 miles per hour.

The practical safety effects of raising the speed threshold does not appear to be extensive. Data obtained since the NPRM regarding the limited number of fatalities associated with on-road use of fleet and personal golf cars indicate that the state and local governments are adequately providing for the safety of

on-road users of those golf cars. The agency recognizes that the limited number may partially reflect the currently limited extent of general on-road use of golf cars. However, NHTSA believes that it also reflects the efforts being made by state and local governments to regulate the safety of the on-road use of golf cars. Even as the number of golf cars used on-road increases, there will be less reason for safety concern about vehicles whose maximum speed is 15 to 20 miles per hour than about vehicles whose maximum speed is 20 to 25 miles per hour. This is because, as also noted above, the potential crash energy of a vehicle traveling 20 to 25 miles per hour is significantly greater than one traveling at less than 20 miles per hour.

By excluding fleet and personal golf cars from the standard's applicability, NHTSA emphasizes that it has not decided or implied that these vehicles should not be subject to any safety regulation by state or local authorities. Moreover, since the agency is not treating those vehicles as motor vehicles, its standard setting activities cannot pre-empt any such state or local regulation. State and local jurisdictions may continue to adopt such safety equipment requirements as they deem appropriate for vehicles, including golf cars, with a maximum speed of 20 miles per hour or less.

*b. Upper Limit of 25 Miles Per Hour.* NHTSA notes Advocates' apprehension that there might be a future increase in the upper speed threshold for low-speed vehicles. This issue was discussed in the City of Palm Desert meeting (see text of Transcript, beginning at p. 17). There was no sentiment for increasing the permissible speed for on-road golf cars beyond 25 miles per hour. Further, while the agency cannot predict the future, it does not contemplate the possibility that future circumstances might justify increasing the upper threshold for LSVs. Even if it did occur, the changed circumstances would cause the agency to examine significantly narrowing the differences between the safety requirements for LSVs and passenger cars.<sup>25</sup> In this regard, as NHTSA has already noted above, the steady increase in Japanese kei car size and engine displacement has resulted, effective in October of this year, in the elimination of any difference between the frontal crash protection safety requirements for kei cars and those for passenger cars. Finally, the agency notes

<sup>24</sup> In submissions made after the NPRM, NGCMA stated that sales of new golf cars are divided into two categories: "fleet golf cars" and "personal golf cars." Fleet golf cars are sold directly to golf courses. They comprise approximately 89 percent of sales. In an April 16, 1998 letter, NGCMA estimated that fleet golf cars have a maximum speed of approximately 12 miles per hour or less. Personal golf cars are sold to individuals, and comprise approximately 11 percent of sales.

<sup>25</sup> NHTSA notes that in the 30 years since the creation of the motor-driven cycle subclass, there has not been any increase in the level of horsepower that divides those vehicles from other motorcycles.

that it would not be appropriate for it to issue this final rule just because of the possibility that there may be future requests for the agency to take additional actions.

NHTSA is aware that a state legislature could define NEVs as vehicles capable of speeds in excess of 25 miles per hour. The agency emphasizes that the enactment of such definition would have no impact upon the Federal definition of LSV, or on the applicability of Standard No. 500. Any NEV or other small passenger vehicle whose maximum speed is higher than 25 miles per hour would not qualify as an LSV. Accordingly, it would have to comply with the full range of Federal motor vehicle safety standards applicable to its type. As noted above, such a vehicle would most likely be classified as a passenger car, and be subject to the full range of FMVSSs for passenger cars.

## 2. Seat belts

The proposed requirement for seat belts is supported by the two known manufacturers of NEVs, both of which advertise their vehicles as being equipped with seat belts, and is not opposed by dealers who produce speed-modified golf cars with a top speed greater than 20 miles per hour.

Based primarily on the fact that the proposal would have applied to those golf cars capable, as originally manufactured, of exceeding 15 miles per hour, golf car manufacturers and dealers initially strenuously opposed requiring seat belts. According to NGCMA:

such a requirement in a golf car as presently manufactured is not necessarily going to provide increased safety to occupants but may enhance the risk of injury or even death if the occupant is restrained in the vehicle by a seat belt assembly upon rollover. Engineering consensus is seat belts on golf cars are inappropriate as is the case with motorcycles, ATVs, snowmobiles and personal watercrafts. An optional passenger roof may be affixed to a golf car for weather protection, but the roofs so installed do not comply with standard ROPS [rollover protection system] criteria.

Golf cars are equipped with a standard hip or hand hold restraint located towards the outside of the seat. However, the hand hold does not prevent the occupant from jumping or leaping out of the golf car to avoid further injury if the golf car is about to roll over. For this reason, NGCMA submits that in lieu of a seat belt requirement for golf cars, a hand hold or hip restraint should be required as set forth in ANSI/NGCMA Z130.1

In its February 21, 1997 comments on the NPRM, NGCMA sought a delay in the implementation of the proposed standard to give the industry time to study "occupant dynamics and a review

of seat belt design and seat belt mounting and attachment methods." It estimated that a minimum of 24 to 36 months would be needed for that purpose.

In its December 22, 1997 submission to the docket, NGCMA clarified its previous statements and indicated that the industry does not manufacture golf cars that exceed 20 miles per hour, and asked that golf cars incapable of exceeding that speed not be required to be equipped with seat belts. Subsequently, over 30 dealers and distributors informed NHTSA that if the agency limited the seat belt requirement as requested by NGCMA in its December 1997 letter, they would not oppose the issuance of an LSV final rule. (March 20, 1998 letter from Eileen Bradner, Counsel to Club Car, Inc.) Given that this final rule does not apply to the golf cars that concerned the industry and its dealers, i.e., golf cars incapable of exceeding 20 miles per hour, the golf car industry's concerns about seat belts and golf cars have been resolved.

Nevertheless, it is necessary to address the safety value of requiring seat belts in speed-modified and custom golf cars whose speed capability exceeds 20 miles per hour, thus qualifying them as LSVs. WLF argued that the use of seat belts by golf car users would lead to decreased, instead of increased, safety.

Seat belts reduce occupant ejection from all types of vehicles. They are highly effective in preventing occupants of open vehicles from falling out during abrupt maneuvers and in preventing or reducing ejection from both closed and open body vehicles in crashes. This is important for safety since ejection onto hard road surfaces in traffic substantially increases the likelihood of death or serious injury.

Support for seat belts in golf cars has been expressed in Sun City, Arizona, the scene of four golf car crash fatalities between 1995 and early 1998, and in nearby Sun City West. In 1996, the Sun City West Property Owners-Resident Association and Sun City Homeowners Association reportedly responded to a perceived increase in the number of golf car crashes by asking local golf car dealers and distributors to install seat belts in all golf cars used on public roads. (The Arizona Republic/The Phoenix Gazette, July 15, 1996).<sup>26</sup> More

<sup>26</sup>In a May 27, 1998 telephone conversation with an agency official, Mr. Paul Schwartz, Chairman of the Transportation Committee, Sun City Homeowners Association, Inc., said his association continued to support seat belts. In a May 28, 1998 telephone conversation, Mr. Noel Willis, President of the Sun City West Property Owners-Residents Association, said his association has no position on seat belts in golf cars.

recently, in a March 12, 1998 Associated Press story, Detective Jeffrey Childs of the Maricopa County (Arizona) Sheriff's Department was reported as saying that use of seat belts in golf cars would prevent injuries and deaths. Maricopa County includes Sun City, which, as noted above, was the site of four golf car crash fatalities between 1995 and the date of that story. Detective Childs reportedly stated his belief that the last person killed in a Sun City golf car crash, a woman thrown from her golf car when it was struck by a passenger car, would have survived had she been wearing a seat belt. He also noted more generally, "(w)e've had incidents where they'll take a corner too fast and get pitched out \* \* \*. At that age, that'll kill them."

Further, seat belt installation continues to have support in the City of Palm Desert. The agency notes that although California eliminated its requirement that local golf car transportation plans include a requirement for seats belts, the City of Palm Desert has retained its seat belt requirement.

The agency concludes that the primary value of seat belt use in LSVs will be in reducing the frequency and severity of injuries in non-rollover crashes of LSVs by preventing occupant ejection. NHTSA estimates that 12-13 percent of the fatalities and injuries in on-road crashes of golf cars involved ejection of the golf car occupants. The importance of preventing ejection may also be seen from examining FARS data. Although those data relate to vehicles with higher speed capability and, in most instances, with enclosed occupant compartments, they are nevertheless instructive. Those data show that the likelihood of a vehicle occupant's being killed if ejected is 4 times greater than the likelihood of being killed if the occupant remains within the vehicle. Seat belts are 99 percent effective at preventing full ejection and 86 percent effective at preventing partial ejection. Even if these compelling data are discounted to reflect differences in the vehicle populations being compared, they still lead the agency to determine that seat belts will enhance the safety of LSV occupants in non-rollover crashes.

In on-road rollover crashes, the LSV occupants are likely to be injured, perhaps seriously, regardless of whether they are belted or unbelted. The agency does not believe that the frequency or severity of on-road rollover injuries will increase if LSV occupants use seat belts.

The conjectures by some commenters that it would be valuable to be able to jump out of an LSV are unsubstantiated speculation that is especially

unpersuasive given the volume of data showing that ejection is extremely dangerous and that seat belts are remarkably effective at preventing ejection. NHTSA notes that there may be less opportunity for, and less potential benefit from, attempting to jump out of an overturning LSV traveling down a road than one being driven on a golf course. Even if there is sufficient time for some occupants to jump out of a golf car during a rollover at speeds under 15 miles per hour on a golf course, there is less likely to be an opportunity to do so during a rollover at 20 to 25 miles per hour. This seems especially true if an LSV rolls over on a road as a result of being struck by a larger, faster moving vehicle. Further, jumping out of an LSV traveling down a road at speeds up to 25 miles per hour onto the hard surface of that road in traffic is more likely to cause serious injury than jumping out of an LSV traveling at a speed of 15 miles per hour or less onto the surface of a golf course. NHTSA also notes that people using seat belt equipped golf cars need not wear the seat belts while driving on a golf course.

Based on these considerations, the agency concludes that it is desirable to require seat belts in LSVs. The agency notes that States and local jurisdictions are free to require safety belts on golf cars whose top speed does not exceed 20 miles per hour.

NHTSA will monitor the safety record of LSVs manufactured in compliance with Standard No. 500. Although the agency does not expect that crash data will bear out WLF's concerns, NHTSA, together with State and local authorities, will respond appropriately if any changes are needed.

### 3. Windshields

The golf car industry argued that installation of an AS-1 windshield would require modification of the windshield mounting brackets, would add weight to the upper area of a golf car, thereby increasing the likelihood of its rollover, and would be easily shattered if struck by a golf ball. Accordingly, the industry recommended allowing a "shatter resistant polymer" windshield as a substitute.

Although NHTSA's reference standard, the City of Palm Desert requirements, did not specify the type of glazing to be used in a windshield, NHTSA tentatively decided that safety would be enhanced by requiring a passenger car-type windshield, i.e., by requiring AS-1 glazing. One basis for this tentative decision was that AS-1 glazing is not subject to diminution of light transference through haze and

scratches. However, given the industry's concern in its comments on the NPRM that golf car safety might be compromised were their windshields to be cracked by errant golf balls, the agency looked for acceptable alternatives.

The agency conducted a series of tests on various types of glazing materials using a projectile to simulate the impact of a golf ball. One type was AS-1 glazing. The AS-1 glazing effectively stopped a golf ball from penetration at the fastest velocities at which a golf ball is likely to travel after being driven off a tee by the average male golfer. However, the impact caused glass fragments of the reverse side of the glazing to be flung into the passenger compartment, creating a possible safety risk for occupants.

Another series of tests was conducted on an AS-6 motorcycle windshield made of "Lucite." When this acrylic plastic windshield was impacted at approximately 120-125 miles per hour, it shattered.

Finally, a series of tests were conducted on polycarbonate plastic glazing at speeds up to 225 miles per hour. No penetration, clouding, or cracking/shattering occurred.

After reviewing these tests and the ANSI standard, the agency judged that AS-5 glazing is preferable to AS-6 glazing for use as a golf car windshield. The specifications for the two types of glazing are similar except that, unlike the AS-6 specifications, the AS-5 specifications include an additional abrasion test that precludes acrylic plastic windshields. While AS-4 glazing specifications also include the additional abrasion test, they do not include the dart drop test requirement in the AS-5 specifications. The agency decided, therefore, to change the standard to provide LSV manufacturers with a choice between AS-1 and AS-5 windshields. NHTSA is retaining AS-1 glazing as an option since some LSVs may not be intended for golf course use at all. In this regard, the agency notes that the device for limiting speed to levels appropriate for golf course use is not standard equipment, but a several hundred dollar option, on the vehicles of one NEV manufacturer. LSV manufacturers which intend and equip their vehicles for golf course use as well as on-road use can choose AS-5 glazing for their windshields.

### 4. VINs, Horn, and Warning Label

Bombardier (008) and CHP (013) recommended that the new class of motor vehicle be required to have a Vehicle Identification Number (VIN), as do other classes of motor vehicles

subject to the FMVSSs. In their opinion, VINs are necessary for state registration and licensing, and for effective and efficient safety enforcement regulation and recalls. Further, VINs could prove a useful tool in NHTSA's monitoring of the record of LSVs.

The agency agrees with these comments and has added a VIN to the list of required safety features. A VIN is necessary to assure timely and correct data collection of LSV crashes, and to assure that the data is electronically searchable. Additionally, because LSVs, as motor vehicles, will be subject to the statutory notification and remedy (recall) requirements, equipping LSVs with VINs will also aid in identifying the vehicle population involved in a given recall and assuring that owners are notified of safety-related defects and noncompliances with this standard.

The commenters suggested that Table 1 of Sec. 565.4, 49 CFR, should also be amended to allow for the use of special characters designating a vehicle as an LSV. This would avoid any confusion in identifying LSVs and other vehicles in crash reports. The agency is interested in this suggestion, and will consider it as a possible candidate for future rulemaking.

Both commenters also recommended that LSVs be required to be equipped with a horn. The City of Palm Desert and Roseville, California require a horn because of the potential safety hazard posed by silent electric vehicles to other users of the roadway, such as pedestrians and bicyclists. The CHP stated that the horn should be capable of emitting a sound audible under normal conditions from a distance of not less than 200 feet, but that it should not be unreasonably loud or harsh.

The NPRM did not propose including a horn because there is no requirement in the FMVSSs that other motor vehicles be equipped with one. A horn is an equipment item that has been standard equipment on every motor vehicle since the earliest days of motor vehicles. Accordingly, there does not appear to be any need to require one for LSVs.

Moreover, local jurisdictions, such as the City of Palm Desert, may adopt their own requirements for a horn, including requirements regulating its performance.

NHTSA also proposed that LSVs be equipped with a permanently affixed label warning the driver against operating the vehicle at speeds over 25 miles per hour. As stated in the NPRM, the purpose of the label was to ensure that the driver of an LSV modified so that its top speed exceeds 25 mph would have a permanent reminder that the vehicle was not designed to be operated at speeds greater than 25 mph.

The agency has decided not to adopt this proposal. The underlying problem is addressed by the prohibition in the Vehicle Safety Act against commercial entities making inoperative any safety feature required by the FMVSSs, including the feature(s) limiting an LSV's top speed to not more than 25 miles per hour. Further, if a person decided to purchase a speed-modified LSV, notwithstanding the presence of the label, having a permanent reminder is unlikely to dissuade the owner from operating that vehicle in excess of 25 miles per hour.

#### 5. Other Areas of Safety Performance; Future Considerations

NHTSA will monitor the safety record of LSVs as the use of those vehicles increases. The agency will also consider whether Standard No. 500 meets the anticipated safety needs of LSV users.

As the agency noted above, crash avoidance considerations make it important that small vehicles be readily detectable by other drivers in the traffic stream. Although LSVs are expected to be somewhat larger than other small vehicles sharing the roadways with them, e.g., motorcycles and bicycles, it is difficult to ensure that drivers of larger vehicles are aware of smaller vehicles that may be sharing the roadway. Smaller vehicles can more easily get lost in the rearview blind spots, or be obscured by an A-pillar when turning in front of larger vehicles from the opposite direction. To offset this problem, motorcycles are manufactured today so that their headlamps are on (or on and modulating) when the ignition is on during daytime operation as a means of enhancing the conspicuity of cyclists, who are also advised to wear bright colored clothing.

NHTSA intends to examine the Federal lighting requirements presently applicable to motor driven cycles to judge their appropriateness and feasibility for LSVs, and to consider whether any of the LSV lighting equipment should be required to meet performance specifications such as those of the SAE or those currently included in Standard No. 108. The agency will also consider the suggestions of some commenters. TSEI (018), CHP (028), Brownell (035), Ziolo (040), and SMV Technologies (068) were concerned that, if lighting equipment were not required to comply with minimum Federal regulations for signals and visibility as well as physical endurance requirements, the danger of crashes will increase.

A further issue is whether the drivers of vehicles approaching LSVs from

behind can detect them in a timely fashion. TSEI also asked for identification of LSVs with a conspicuity device that would make it clear that these vehicles are operating at lower speeds. Ziolo suggested that they be equipped with a high-intensity flashing yellow lamp on the rear or on the top. SMV Technologies recommended a retroreflective orange triangle to be applied front and rear. NHTSA will examine these suggestions. For the present, in consideration of these comments, it has added a rear reflex reflector to Standard No. 500's required lighting equipment.

NHTSA will also further examine braking performance issues as part of its crash-avoidance standards review.

The agency is also interested in considering further the appropriateness of applying other small-vehicle standards to LSVs, particularly with reference to occupant protection in crashes and safety from propulsion systems after crashes. The first of these standards is the golf car industry standard, Z130.1. Although this standard is predicated on a vehicle maximum speed of 15 miles per hour, the standard contains tests and procedures that warrant examination with respect to vehicles with a maximum speed of 20 to 25 miles per hour. For example, requirements are specified for static stability in both longitudinal and lateral test attitudes (9.6.3) and service and parking brake performance (9.6.4). Service brake performance tests are conducted on a horizontal flat surface at maximum vehicle speed. Specifications are also specified for battery installation (9.7) whose impact containment is demonstrated under a dynamic test in which a golf car is propelled at maximum speed into a concrete or steel barrier in both forward and reverse directions. Golf cars are also subject to specifications for wiring systems (paragraph 10.1, for electric-powered vehicles; paragraph 11.1, for gasoline-powered vehicles) and heat-generating components (paragraph 10.2, for electric golf cars; paragraph 11.2 for others). Gasoline-powered golf cars are also subject to specifications for fuel systems (paragraph 11.3) whose impact containment is demonstrated in frontal and reverse barrier tests at maximum speed. These latter include containment in a roll-over situation.

NHTSA will also follow the ongoing SAE efforts to develop a standard applicable to "closed community vehicles." It is anticipated that this standard will address rollover characteristics of small vehicles with relatively high centers of gravity, and

the concomitant risk of leaking of fuel or caustic fluids into the passenger compartment in the event of a rollover.

Finally, the agency intends to examine the appropriateness of specifying strength requirements for seat belt anchorages in LSVs.

#### D. Compliance with other Statutory Requirements Relating to Safety and with Federal Statutes Regulating Non-Safety Aspects of Motor Vehicles

##### 1. Other Statutory Requirements Relating to Safety

This rulemaking places NEVs and golf cars capable of exceeding 20 miles per hour in a new class of "motor vehicles," and excludes them from the FMVSSs that they would otherwise have to meet. Notwithstanding their classification as LSVs, instead of passenger cars, these NEVs and golf cars remain subject to other safety statutes and regulations implementing Chapter 301 that establish obligations for manufacturers of "motor vehicles," such as the requirement to file an identification statement under Part 566, *Manufacturer Identification*; to certify vehicles pursuant to Part 567, *Certification*; to provide notification and remedy of safety-related defects and noncompliances (49 U.S.C. §§ 30118–30120; Part 573, *Defect and Noncompliance Reports*; and Part 577, *Defect and Noncompliance Notification*); to retain records (Part 576, *Record Retention*); and to provide consumer information (Part 575, *Consumer Information Regulations*). However, since LSVs are excluded from the requirement of Standard No. 110 that they be equipped with tires complying with Standard No. 109, NHTSA regards Part 574, *Tire Identification and Recordkeeping*, as inapplicable to manufacturers of LSVs, notwithstanding that LSVs are "motor vehicles."

##### 2. Federal Statutes Regulating Non-Safety Aspects of Motor Vehicles

NHTSA's vehicle safety program is but one of a number of Federal regulatory programs affecting motor vehicles. Others include NHTSA's fuel economy, theft, property damage reduction (bumpers), and domestic content labeling programs, and the Environmental Protection Agency's emissions program. Having been able to use the discretion granted the agency by the Vehicle Safety Act to tailor the FMVSS to the particular safety problems and compliance capabilities of low-speed vehicles, NHTSA has considered whether the Congressional statutes regulating various non-safety aspects of motor vehicles give the agency similar

discretion to determine whether and to what extent low-speed vehicles should comply with the requirements of those statutes.

*a. Theft.* NHTSA issued Part 541, Federal Motor Vehicle Theft Prevention Standard, pursuant to 49 U.S.C. Chapter 331, Theft Prevention. The purpose of the standard is to reduce the incidence of passenger motor vehicle thefts by facilitating the tracing and recovery of parts from stolen vehicles. The standard seeks to facilitate such tracing by requiring marking of major component parts of higher theft vehicle lines.

While LSVs subject to Standard No. 500 would be passenger motor vehicles under Chapter 331, NHTSA believes there would not, for the immediate future, be any reliable way of evaluating their likely theft rates. This is because LSVs do not currently exist as a vehicle class, and they are sufficiently different from other classes of vehicles to make comparisons related to theft unreliable. Thus, it could not be determined whether their rates were high enough to subject them to parts marking.

Given that application of the Theft Prevention Standard is necessarily dependent on making determinations concerning theft rates, the agency has decided not to apply the standard to LSVs until there is sufficient information to make such determinations. Once sufficient information becomes available, NHTSA will revisit this issue.

*b. Content Labeling.* The American Automobile Labeling Act (AALA), codified at 49 U.S.C. § 32304, requires passenger motor vehicles to be labeled with information about their domestic and foreign content. More specifically, the Act generally requires each new passenger motor vehicle to be labeled with the following five items of information: (1) U.S./Canadian parts content, (2) major sources of foreign parts content, (3) the final assembly point by city, state (where appropriate), and country; (4) the country of origin of the engine parts, and (5) the country of origin of the transmission parts. The Act specifies that the first two items of information, the U.S./Canadian parts content and major sources of foreign parts content, are calculated on a "carline" basis rather than for each individual vehicle. NHTSA's regulations implementing the AALA are set forth in Part 583, Automobile Parts Content Labeling.

NHTSA notes that the LSVs subject to Standard No. 500 come within the definition of "passenger motor vehicle" under the AALA. Therefore, manufacturers of LSVs are necessarily subject to the requirements of Part 583,

subject to certain important limitations discussed below.

A manufacturer that produces LSVs from various parts at a final assembly point is subject to Part 583 in the same manner as manufacturers of passenger cars and light trucks. The manufacturer is required to affix the required label containing content information to all new LSVs.<sup>27</sup> The manufacturer must calculate the information for the label by using information provided to it by suppliers. Under Part 583, the manufacturer is required to request its suppliers to provide the relevant content information specified in Part 583, and the suppliers are required to provide the specified information in response to such requests. The agency notes that it recently issued a letter of interpretation (dated March 5, 1998, and addressed to Erika Z. Jones, Esq.) concerning how Part 583 applies to electric vehicles. This letter is available on NHTSA's website.

The agency has concluded that Part 583 does not, however, apply to dealers and entities that modify golf cars so that their top speed is increased so that it is between 20 and 25 mph. This conclusion is based on the overall structure of the AALA. The agency notes that it considered a similar issue in promulgating Part 583. NHTSA decided that alterers are not covered by the Act. The agency explained: "Alterers modify completed vehicles, after they have left the manufacturer's final assembly point. The parts they use are not considered equipment by [the AALA], because they are never shipped to the final assembly point." 59 FR 37321; July 21, 1994. The agency notes that while the golf cars these dealers and other entities would be modifying are not considered motor vehicles prior to the modification, they are nonetheless completed vehicles after they have left the final assembly point. Therefore, NHTSA believes it is appropriate to apply the same result as it reached for alterers.

*c. Corporate Average Fuel Economy.* NHTSA observes that LSVs are expected to have very high fuel economy because of their small size. Accordingly, a fleet consisting solely of LSVs should not have any difficulty meeting the corporate average fuel economy standards applicable to passenger motor vehicles and light trucks pursuant to 49 U.S.C. Chapter 329, Automobile Fuel Economy. The standards are set forth at 49 CFR Parts 531 and 533. The agency

<sup>27</sup> A manufacturer that produces a total of fewer than 1000 passenger motor vehicles in a model year is subject to more limited labeling requirements. See 49 CFR § 583.5(g).

notes that while it has the responsibility for setting fuel economy standards, the procedures for measuring and calculating fuel economy are established by EPA. See 49 U.S.C. 32904.

NHTSA enforces the fuel economy standards based on information developed by EPA under those procedures. However, the present EPA test procedure specifies that test vehicles must operate during testing at speeds that are above the capability of LSVs. Accordingly, the procedure cannot be used to measure the fuel economy of these vehicles.

NHTSA will not enforce fuel economy standards, or regulations related to those standards (e.g., reporting requirements) for any vehicles for which EPA does not have procedures for measuring and calculating fuel economy. Manufacturers of LSVs, including modifiers of golf cars, should contact EPA concerning their emissions responsibilities and concerning any changes in that agency's procedures for measuring and calculating fuel economy.

*d. Bumper Standards.* Under 49 U.S.C. Chapter 325, Bumper Standards, NHTSA is required to issue bumper standards for passenger motor vehicles. The purpose of that chapter is to reduce economic loss resulting from damage to passenger motor vehicles involved in motor vehicle crashes. Under 49 U.S.C. § 32502(c), the agency may, for good cause, exempt from any part of a standard a multipurpose passenger vehicle or a make, model, or class of a passenger motor vehicle manufactured for a special use, if the standard would interfere unreasonably with the special use of the vehicle.

NHTSA's regulations implementing Chapter 325 are set forth in Part 581, Bumper Standard. The standard applies to passenger motor vehicles other than multipurpose passenger vehicles. The agency has not applied Part 581 to multipurpose passenger vehicles because of concerns that the standard could interfere with the use of these vehicles, particularly with respect to off-road operation.

In the NPRM, NHTSA proposed to conclude that LSVs are not passenger motor vehicles within the meaning of 49 U.S.C. Chapter 325, and that the bumper standard is therefore not applicable to LSVs. On further consideration, the agency has decided that it cannot make that conclusion consistent with Chapter 325. However, NHTSA has concluded that the special use rationale for not applying the Bumper Standard to multipurpose passenger vehicles also applies to LSVs subject to Standard No. 500. Many of these vehicles are golf cars

or are largely derived from golf cars. All or most are currently intended for both on-road and off-road use. Application of the Bumper Standard to these vehicles could interfere with off-road operation, e.g., the need of these vehicles to negotiate the uneven terrain of a golf course. Therefore, the agency finds good cause for exempting them from part 581.

#### V. Effective Date.

The agency has decided to make its vehicle classification changes and new Standard No. 500 effective upon the publication of this final rule in the **Federal Register**. These actions relieve a restriction on the manufacturers of LSVs. They do so by bringing an immediate end to the regulatory conflict between State and local laws on the one hand and Federal laws on the other, and replacing the current impracticable and overly extensive set of Federal requirements with a set that is more appropriate and reasonable for this new, emerging class of vehicles. NEV manufacturers and modifiers of golf cars wish to have the opportunity to begin the manufacture and sale of vehicles complying with the new standard as soon as possible.

The golf car industry's initial 36-month lead time request was based upon the proposed lower threshold of 15 miles per hour, the industry's opposition to seat belts and its wish to develop and implement an integrated rollover protection system that might require modifications to its existing vehicle designs. In its December 22, 1997 letter, NGCMA shortened the requested lead time to 6 to 12 months, provided that seat belts were not required for their golf cars as originally manufactured. This request, like the first, was based on the proposed 15-mile-per-hour threshold. As noted above, the lower threshold has been raised to 20 miles per hour in this final rule, thus excluding golf cars as they are now originally manufactured, and resolving the lead time concerns of the golf car manufacturers.

Bombardier indicated that its NEV is equipped to comply with the new standard, as proposed, and that it needed no lead time. Information in the VRTC study indicates that the Global Electric MotorCars' NEV complies, except for red reflex reflectors and mirrors which can be readily added.

The remaining lead time issue concerns those golf car dealers who, on or after the effective date of the final rule, modify the maximum speed capability of golf cars so that it is between 20 and 25 miles per hour. The salient fact is that this rulemaking eliminates existing unnecessary

restrictions on those modifications. Prior to the effective date, those speed modifications have the effect of converting the golf cars into passenger cars, making it necessary for the modifiers to conform the golf cars to the FMVSSs for passenger cars. Since such conformance is not practicable, modifiers are currently legally unable to increase the top speed of golf cars above 20 miles per hour. Beginning on the effective date, the legal obligations of the modifiers under the Vehicle Safety Act are significantly reduced. Instead of being responsible for conforming the golf cars with the FMVSSs for passenger cars, the modifiers will be responsible for conforming them with the less extensive array of requirements applicable to LSVs.

In consideration of the foregoing, the agency has decided to make this final rule effective upon the publication of this final rule in the **Federal Register**. For the reasons discussed above, NHTSA finds that there is good cause for setting an effective date earlier than 180 days after issuance of the final rule is in the public interest. Accordingly, the final rule becomes effective upon publication in the **Federal Register**.

#### VI. Rulemaking Analyses and Notices

##### *Executive Order 12866 and DOT Regulatory Policies and Procedures*

This action is not significant under Executive Order 12866 and has not been reviewed by the Office of Management and Budget under that Executive Order. Further, this action is not significant under the Department of Transportation's Regulatory Policies and Procedure. NHTSA has prepared and docketed a final regulatory evaluation (FRE) for this final rule.

Since LSVs are a new type of motor vehicle, it is not possible to determine annual benefit and cost figures. As to benefits, the agency notes that the demand for sub-25 mph vehicles is currently being met primarily by fleet and personal golf cars and by speed-modified golf cars that were not originally manufactured for on-road use. If the agency did not take the actions specified in this final rule, the demand would continue to be met in that manner. The vehicles would be equipped with at least some of the safety features required by Standard No. 500, but not seat belts except in the City of Palm Desert. The issuance of this final rule ensures that the demand will be met in the future by vehicles originally manufactured for on-road use and equipped with the full array of safety features required by that standard.

As to the costs of producing NEVs and other LSVs in compliance with Standard No. 500, the significance of those costs can be fully appreciated only by comparing them with the costs that the manufacturers of those vehicles would have had to bear in the absence of this rulemaking. If the agency had adopted the regulatory option of making no change in its regulations and standards, LSV manufacturers would have been subject to the considerably more costly array of passenger car standards.

As discussed previously in this document, manufacturers of both the Bombardier NEV and Global Electric MotorCars NEV have designed their vehicles to incorporate basic safety equipment such as three-point seat belts, headlamps, and stop lamps before NHTSA's first public meeting in July 1996. In response to the NPRM, Bombardier termed the City of Palm Desert's requirements "entirely practicable" and remarked that "Indeed, Bombardier currently complies with these existing state safety equipment requirements" (008). Although Global Electric MotorCars' predecessor, Trans2, was silent on the subject, its lack of comment and request for "expedited rulemaking" leading to a final rule by "June 1997" has been read to mean that it, too, found compliance with Standard No. 500 to be practicable (007).

In NHTSA's judgment, the final rule will not affect golf car manufacturers since it applies only to vehicles with a top speed of more than 20 miles per hour and the industry has represented that it does not manufacture any such vehicles. Should a golf car ever be modified to have a top speed capability of 20 to 25 miles per hour, it would then be subject to Standard No. 500.

In November 1993, the City of Palm Desert initiated a survey of golf car owners who registered their vehicles in its golf car program. The responses from 61 owners indicated that the cost to retrofit a golf car with the equipment prescribed by that city was an average of \$150 in January 1994. At the July 1996 public meeting in the City of Palm Desert, an Arizona golf car dealer estimated that the cost of adding the equipment required in Arizona (which does not include seat belts) could be as high as \$400.

This latter figure roughly accords with NHTSA's own total equipment cost estimates for taking a golf car that complies with none of the requirements in Standard No. 500 and modifying it to comply with the standard. In the FRE, the agency estimates \$357 for modifying a golf car to conform to Standard No. 500 with a two-point belt system, and

\$370 for achieving conformance with a three-point belt system (in 1997 dollars). Either type of belt system is permissible under the new standard. NHTSA's cost estimates, however, do not cover the cost of modifications that a dealer or other commercial entity itself may deem desirable for the on-road use of a golf car, such as modifications to the brake system to accommodate faster speeds. NHTSA estimates that the compliance costs for the two current makes of NEVs will be only about \$25 since they already have most of the required equipment. The additional cost is for side and rear reflex reflectors, driver or passenger side mirror, and a vehicle identification number label.

#### *Regulatory Flexibility Act*

The agency has also considered the impacts of this rulemaking action in relation to the Regulatory Flexibility Act (5 U.S.C. Sec. 601 *et seq.* I certify that this rulemaking action will not have a significant economic impact upon a substantial number of small entities.

The following is NHTSA's statement providing the factual basis for the certification (5 U.S.C. Sec. 605(b)). The final rule primarily affects manufacturers of non-conventional motor vehicles not heretofore regulated by NHTSA. Under 15 U.S.C. Chapter 14A "Aid to Small Businesses", a small business concern is "one which is independently owned and operated and which is not dominant in its field of operation" (15 U.S.C. Sec. 632). The Small Business Administration's (SBA) regulations at 13 CFR part 121 define a small business, in part, as a business entity "which operates primarily within the United States."

The record of this rulemaking indicates that there is only one entity in the United States that intends to produce an LSV as defined by the final rule, Global Electric MotorsCars. As noted in a footnote above, Global Electric MotorCars has taken over Trans2 Corporation and will market the Trans2 as the "GEM." Therefore, it is "dominant in its field of operation." A second entity that intends to manufacture LSVs, Bombardier, operates primarily outside the United States. There were four golf car manufacturers who commented on the NPRM, E-Z-Go Textron, Club Car, Inc., Melex, Inc., and Western Golf Car, all located in the United States. Golf car manufacturers are not "manufacturers" of LSVs under the final rule because the record indicates that none produces a vehicle whose maximum speed exceeds 20 miles per hour.

However, a person who modifies a golf car so that its maximum speed is

between 20 miles and 25 per hour is a "manufacturer" of an LSV and is legally responsible for its compliance and for certifying that compliance. As noted above in the discussion of the effective date, the salient fact with respect to the impact of this rulemaking on modifiers is that it replaces one set of requirements with which the modifiers cannot comply with a set with which they can comply. Prior to this final rule, those speed modifications convert the golf cars into passenger cars, making it necessary for the modifiers to conform the golf cars to the FMVSSs for passenger cars. Since this is not possible, modifiers have been legally unable to modify golf cars so that their top speed exceeds 20 miles per hour. Beginning on the effective date of this final rule, the legal obligations of the modifiers under the Vehicle Safety Act are significantly reduced. Instead of being responsible for conforming the golf cars with FMVSSs for that type of vehicle, the modifiers are responsible for conforming them with the less extensive array of requirements applicable to LSVs. Further, the equipment necessary to comply with Standard No. 500 can be obtained and added by modifiers readily and at moderate cost.

Further, small organizations and governmental jurisdictions will not be significantly affected. The testimony at the public meetings and comments to the docket indicate that the purchasers of LSVs will be private individuals who want a small, alternative mode of transportation instead of a conventional motor vehicle, as a second vehicle for use in their immediate residential area. Nevertheless, the availability of these small vehicles to small organizations and governmental jurisdictions may assist them in reducing costs associated with their motor vehicle fleets and in achieving local clean air goals.

#### *Paperwork Reduction Act*

The vehicles affected by this final rule are presently classified as passenger cars and, as such, are subject to various information collection requirements, e.g., Part 537, *Automotive Fuel Economy Reports* (OMB Control No. 2127-0019); Part 566, *Manufacturer Identification* (OMB Control No. 2127-0043); Consolidated VIN and Theft Prevention Standard and Labeling Requirements (Parts 541, 565 and 567)(OMB Control No. 2127-0510); Section 571.205, *Glazing materials* (OMB Control No. 2127-0038); Section 571.209, *Seat belt assemblies* (OMB Control No. 2127-0512); Part 573 *Defect and Noncompliance Reports* (OMB Control No. 2127-0004); Part 575, *Consumer*

*Information Regulations* (OMB Control No. 2127-0049); and Part 576, *Record Retention* (OMB Control No. 2127-0042). The final rule removes those vehicles from the passenger car class and places them in a new class, i.e., low-speed vehicles. As low-speed vehicles, they remain subject to those requirements.

#### *Executive Order 12612 (Federalism) and Unfunded Mandates*

This rulemaking has also been analyzed in accordance with the principles and criteria contained in Executive Order 12612. NHTSA has determined that this rulemaking does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment. This final rule will, as a practical matter, have only limited effect on state and local regulation of the safety equipment on golf cars and NEVs whose top speed qualifies them as LSVs.

The definition of LSV in Standard No. 500 does not encompass a golf car with a maximum speed of 20 miles per hour or less, or a NEV with a maximum speed of more than 25 miles per hour. Thus, this final rule has no effect on the ability of state and local governments to specify requirements for vehicles other than LSVs. State and local governments continue to be able to adopt or continue to apply any safety equipment standard it wishes for golf cars with a maximum speed of 20 miles per hour or less.

However, it does encompass golf cars and NEVs with a maximum speed greater than 20 miles per hour, but not greater than 25 miles per hour. Under the preemption provisions of 49 U.S.C. 30103(b)(1), with respect to those areas of a motor vehicle's safety performance regulated by the Federal government, any state and local safety standards addressing those areas must be identical. Thus, the state or local standard, if any, for vehicles classified as LSVs must be identical to Standard No. 500 in those areas covered by that standard. For example, since Standard No. 500 addresses the subject of the type of lights which must be provided, state and local governments may not require additional types of lights. Further, since the agency has not specified performance requirements for any of the required lights, state and local governments may not do so either.

NHTSA is not aware of any aspects of existing state laws that might be regarded as preempted by the issuance of this final rule. Those laws do not contain performance requirements for the items of equipment required by Standard No. 500. Further, state and local governments may supplement

Standard No. 500 in some respects. They may do so by requiring the installation of and regulate the performance of safety equipment not required by the standard. NHTSA wishes to make several other observations regarding the ability of state and local governments to make regulatory decisions regarding LSVs. First, NHTSA recognizes that while some states and local governments have taken steps to permit on-road use of golf cars and LSVs, others have not. In the agency's view, this final rule does not alter the ability of states and local governments to make that decision for themselves. Similarly, this rulemaking has no effect on any other aspect of State or local regulation of golf carts and NEVs, including classification for taxation, vehicle and operator registration, and conditions of use upon their state and local roads.

Second, the agency notes that the issuance of Standard No. 500 does not require current owners of golf cars having a top speed between 20 to 25 miles per hour to retrofit those golf cars with the equipment specified in the standard. Standard No. 500 applies to new LSVs only. The decision whether to require retrofitting of golf cars that are already on the road remains in the domain of state and local law.

In issuing this final rule, the agency notes, for the purposes of the Unfunded Mandates Act, that it is pursuing the least cost alternative for addressing the safety of LSVs. As noted above, the agency is substituting a less extensive, less expensive set of requirements for the existing full array of passenger car safety standards. Further, the agency is basing almost all of the requirements of Standard No. 500 on state and local requirements for on-road use of golf cars. Finally, the agency has not, at this time, adopted any performance requirements for the required items of safety equipment other than seat belts.

State and local agencies in California and Arizona, including the California Air Resources Board, as well as Sierra Club California and a Florida State University professor who analyzed the deployment of electric cars in the MetroDade Transit System Station Car Program, submitted comments suggesting that the final rule will encourage the manufacture and use of electric vehicles and thus have beneficial environmental effects. Southern California Edison and the Arizona Economic Development Department noted at the first public meeting that their statements about such beneficial effects included consideration of power plant emissions. Commenters also indicated that any increase in the

number of sub-25 mph vehicles as a result of this rulemaking is likely to be primarily in vehicles powered by electricity as opposed to gasoline. There is already a strong and growing interest in sub-25 mph cars that are electric. Commenters submitted data showing that over 60 percent of conventional golf cars are electric and that the percentage has been fairly steadily increasing in this decade. Further, both NEVs are electric.

The agency agrees with these comments, and believes that the final rule will have a generally stimulating effect on the deployment of electric LSVs. This final rule may also lead to modifications in the speed of conventional golf cars, and expanded use of these vehicles as LSVs. According to VRTC, these modified vehicles, too, are likely to be electric vehicles. They are generally easier to modify than LSVs with internal combustion engines to gain cost-effective, significant increases in speed.

It is the judgment of the agency that this rule will not result in significant impacts to the environment, within the meaning of National Environmental Policy Act. The increased use of zero-emission electric vehicles, in lieu of vehicles with internal combustion engines, is likely to have a beneficial effect on the environment, particularly in urban corridors where air pollution is often greatest. However, inasmuch as LSVs are specialty vehicles with a relatively limited niche market, the environmental effects are necessarily limited in scope.

#### Civil Justice

The final rule does not have any retroactive effect. Under 49 U.S.C. 30103, whenever a Federal motor vehicle safety standard is in effect, a state may not adopt or maintain a safety standard applicable to the same aspect of performance which is not identical to the Federal standard. Section 30163 sets forth a procedure for judicial review of final rules establishing, amending, or revoking safety standards. That section does not require submission of a petition for reconsideration or other administrative proceedings before parties may file suit in court.

#### List of Subjects

##### 49 CFR Part 571

Imports, Motor vehicle safety, Motor vehicles, Incorporation by reference.

##### 49 CFR Part 581

Imports, Motor vehicles, Incorporation by reference.

In consideration of the foregoing, 49 CFR parts 571 and 581 are amended as follows:

#### PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

1. The authority citation for part 571 continues to read as follows:

**Authority:** 49 U.S.C. 322, 30111, 30115, 30166; delegation of authority at 49 CFR 1.50.

2. Paragraph 571.3(b) is amended to add a definition of "low-speed vehicle" and to revise the definitions of "multipurpose passenger vehicle," and "passenger car," to read as follows:

#### § 571.3 Definitions.

\* \* \* \* \*

(b) \* \* \*

*Low-speed vehicle* means a 4-wheeled motor vehicle, other than a truck, whose speed attainable in 1.6 km (1 mile) is more than 32 kilometers per hour (20 miles per hour) and not more than 40 kilometers per hour (25 miles per hour) on a paved level surface.

\* \* \* \* \*

*Multipurpose passenger vehicle* means a motor vehicle with motive power, except a low-speed vehicle or trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation.

\* \* \* \* \*

*Passenger car* means a motor vehicle with motive power, except a low-speed vehicle, multipurpose passenger vehicle, motorcycle, or trailer, designed for carrying 10 persons or less.

\* \* \* \* \*

3. A new section 571.500 is added to read as follows:

#### § 571.500 Standard No. 500; Low-speed vehicles.

S1. *Scope.* This standard specifies requirements for low-speed vehicles.

S2. *Purpose.* The purpose of this standard is to ensure that low-speed vehicles operated on the public streets, roads, and highways are equipped with the minimum motor vehicle equipment appropriate for motor vehicle safety.

S3. *Applicability.* This standard applies to low-speed vehicles.

S4. (Reserved.)

S5. *Requirements.*

(a) When tested in accordance with test conditions in S6 and test procedures in S7, the maximum speed attainable in 1.6 km (1 mile) by each low-speed vehicle shall not more than 40 kilometers per hour (25 miles per hour).

(b) Each low-speed vehicle shall be equipped with:

(1) headlamps,

- (2) front and rear turn signal lamps,
- (3) taillamps,
- (4) stop lamps,
- (5) reflex reflectors: one red on each side as far to the rear as practicable, and one red on the rear,
- (6) an exterior mirror mounted on the driver's side of the vehicle and either an exterior mirror mounted on the passenger's side of the vehicle or an interior mirror,
- (7) a parking brake,
- (8) a windshield of AS-1 or AS-5 composition, that conforms to the American National Standard Institute's "Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways," Z-26.1-1977, January 28, 1977, as supplemented by Z26.1a, July 3, 1980 (incorporated by reference; see 49 CFR 571.5),
- (9) a VIN that conforms to the requirements of part 565 *Vehicle Identification Number* of this chapter, and
- (10) a Type 1 or Type 2 seat belt assembly conforming to Sec. 571.209 of this part, Federal Motor Vehicle Safety Standard No. 209, *Seat belt assemblies*, installed at each designated seating position.

S6. *General test conditions.* Each vehicle must meet the performance limit specified in S5(a) under the following test conditions.

S6.1. *Ambient conditions.*

S6.1.1. *Ambient temperature.* The ambient temperature is any temperature between 0 °C (32 °F) and 40 °C (104 °F).

S6.1.2. *Wind speed.* The wind speed is not greater than 5 m/s (11.2 mph).

S6.2. *Road test surface.*

S6.2.1. *Pavement friction.* Unless otherwise specified, the road test

surface produces a peak friction coefficient (PFC) of 0.9 when measured using a standard reference test tire that meets the specifications of American Society for Testing and Materials (ASTM) E1136, "Standard Specification for A Radial Standard Reference Test Tire," in accordance with ASTM Method E 1337-90, "Standard Test Method for Determining Longitudinal Peak Braking Coefficient of Paved Surfaces Using a Standard Reference Test Tire," at a speed of 64.4 km/h (40.0 mph), without water delivery (incorporated by reference; see 49 CFR 571.5).

S6.2.2. *Gradient.* The test surface has not more than a 1 percent gradient in the direction of testing and not more than a 2 percent gradient perpendicular to the direction of testing.

S6.2.3. *Lane width.* The lane width is not less than 3.5 m (11.5 ft).

S6.3. *Vehicle conditions.*

S6.3.1. The test weight for maximum speed is unloaded vehicle weight plus a mass of 78 kg (170 pounds), including driver and instrumentation.

S6.3.2. No adjustment, repair or replacement of any component is allowed after the start of the first performance test.

S6.3.3. *Tire inflation pressure.* Cold inflation pressure is not more than the maximum permissible pressure molded on the tire sidewall.

S6.3.4. *Break-in.* The vehicle completes the manufacturer's recommended break-in agenda as a minimum condition prior to beginning the performance tests.

S6.3.5. *Vehicle openings.* All vehicle openings (doors, windows, hood, trunk, convertible top, cargo doors, etc.) are

closed except as required for instrumentation purposes.

S6.3.6. *Battery powered vehicles.* Prior to beginning the performance tests, propulsion batteries are at the state of charge recommended by the manufacturer or, if the manufacturer has made no recommendation, at a state of charge of not less than 95 percent. No further charging of any propulsion battery is permissible.

S7. *Test procedure.* Each vehicle must meet the performance limit specified in S5(a) under the following test procedure. The maximum speed performance is determined by measuring the maximum attainable vehicle speed at any point in a distance of 1.6 km (1.0 mile) from a standing start and repeated in the opposite direction within 30 minutes.

\* \* \* \* \*

## PART 581—BUMPER STANDARD

4. The authority citation for part 581 is revised to read as follows:

**Authority:** 49 U.S.C. 322, 30111, 30115, 32502, 32504; delegation of authority at 49 CFR 1.50.

5. Section 581.3 is revised to read as follows:

### § 581.3 Application.

This standard applies to passenger motor vehicles other than multipurpose passenger vehicles and low-speed vehicles as defined in 49 CFR part 571.3(b).

Issued on: June 9, 1998.

**Ricardo Martinez,**  
*Administrator*

[FR Doc. 98-16003 Filed 6-12-98; 10:00 am]  
BILLING CODE 4910-59-P