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49 CFR Part 571

Federal Motor Vehicle Safety Standards; Occupant Crash Protection; Final Rule

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA–2013–0121]

RIN 2127–AK56

Federal Motor Vehicle Safety Standards; Occupant Crash Protection

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: Completing the first initiative of NHTSA's 2007 ''NHTSA's Approach to Motorcoach Safety'' plan and one of the principal undertakings of DOT's 2009 Motorcoach Safety Action Plan, and fulfilling a statutory mandate of the Motorcoach Enhanced Safety Act of 2012, incorporated into the Moving Ahead for Progress in the 21st Century Act, this final rule amends the Federal motor vehicle safety standard (FMVSS) on occupant crash protection to require lap/shoulder seat belts for each passenger seating position in all new over-the-road buses, and in new buses other than over-the-road buses with a gross vehicle weight rating (GVWR) greater than 11,793 kilograms (kg) (26,000 pounds (lb), with certain exclusions. By requiring the passenger lap/shoulder seat belts, this final rule significantly reduces the risk of fatality and serious injury in frontal crashes and the risk of occupant ejection in rollovers, thus considerably enhancing the safety of these vehicles.

DATES: The effective date of this final rule is November 28, 2016. Optional early compliance is permitted.

Petitions for reconsideration: Petitions for reconsideration of this final rule must be received not later than January 9, 2014.

ADDRESSES: Petitions for reconsideration of this final rule must refer to the docket and notice number set forth above and be submitted to the Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: For non-legal issues, you may contact Lawrence Valvo or Louis Molino, NHTSA Office of Crashworthiness Standards, telephone 202–366–1740, fax 202–493–2739. For legal issues: Deirdre Fujita, NHTSA Office of Chief Counsel, telephone 202–366–2992, fax 202–366–3820. The mailing address for these officials is: National Highway Traffic Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue SE., West Building, Washington, DC 20590.

SUPPLEMENTARY INFORMATION: Completing the first initiative of NHTSA's 2007 ''NHTSA's Approach to Motorcoach Safety'' plan and one of the principal undertakings of DOT's 2009 Motorcoach Safety Action Plan, and fulfilling a statutory mandate of the Motorcoach Enhanced Safety Act of 2012, incorporated into the Moving Ahead for Progress in the 21st Century Act, this final rule amends the Federal motor vehicle safety standard (FMVSS) on occupant crash protection to require lap/shoulder seat belts for each passenger seating position in: (a) All new over-the-road buses; and (b) in new buses other than over-the-road buses, with a gross vehicle weight rating (GVWR) greater than 11,793 kilograms (kg) (26,000 pounds (lb)).[1] The notice of proposed rulemaking preceding this final rule called buses with GVWR greater than 11,793 kg (26,000 lb) ''motorcoaches.'' Although transportation by these buses overall is a safe form of transportation in the U.S., several bus crashes in recent years have illustrated that crashes of these vehicles can cause a significant number of fatal or serious injuries in a single event, due in part to the high occupancy rate of the vehicles, the speed at which they travel, and occupant ejection in rollovers. NHTSA's safety research on seat belts in large buses (greater than 11,793 kg (26,000 lb) GVWR) completed in 2009, shows that the installation of lap/shoulder belts on the vehicles is practicable and effective and could reduce the risk of fatal injuries in rollover crashes by 77 percent, primarily by preventing occupant ejection. Lap/shoulder belts are also highly effective in preventing fatalities and serious injuries in frontal crashes, and will enhance protection in side crashes in the affected buses. By requiring passenger lap/shoulder seat belts on (a) new over-the-road buses, and (b) new buses, other than over the road buses, with a GVWR greater than 11,793 kg (26,000 lb), this final rule significantly reduces the risk of fatality and serious injury in frontal crashes and the risk of occupant ejection in rollovers, thus considerably enhancing the safety of these vehicles.

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I. Executive Summary

One of the guiding principles NHTSA considers in determining the priorities of our rulemaking projects is to protect the public against unreasonable risk of death or injury in high-occupancy vehicles. In 2007, NHTSA published a comprehensive plan to research improvements to bus safety, entitled, ''NHTSA's Approach to Motorcoach Safety.''[2] In the plan, the term ''motorcoach'' referred to intercity transport buses. This plan was developed in direct response to several National Transportation Safety Board

[1] Some buses are excluded from this latter category, such as transit and school buses.

[2] *http://www.regulations.gov/#!documentDetail;D=NHTSA-2007-28793-0001.* See Docket No. NHTSA-2007-28793.

(NTSB) recommendations and also to address several crashes that occurred since the recommendations were issued. NHTSA's plan identified as our highest priorities four specific areas where we can most effectively address open NTSB recommendations in the near-term, and also improve the safety of the buses most expeditiously. The four priority areas were: (1) Passenger ejection; (2) rollover structural integrity; (3) emergency egress; and (4) fire safety.[3]

This final rule addresses the first priority area of the NHTSA plan, to minimize intercity bus passenger and driver ejection by requiring the installation of seat belts for all occupants of: (a) New over-the-road buses;[4] and (b) new buses, other than over-the-road buses, with a GVWR greater than 11,793 kg (26,000 lb).[5] The notice of proposed rulemaking (NPRM) preceding this final rule, published on August 18, 2010 (75 FR 50958), proposed to call buses with a GVWR greater than 11,793 kg (26,000 lb) ''motorcoaches,'' and proposed to apply seat belt requirements to those vehicles.

This final rule fulfills a statutory mandate on motorcoach safety set forth in the ''Moving Ahead for Progress in the 21st Century Act'' (MAP–21), On July 6, 2012, President Obama signed MAP–21, which incorporated the ''Motorcoach Enhanced Safety Act of 2012'' (Motorcoach Enhanced Safety Act) in Subtitle G. Among other matters, the Motorcoach Enhanced Safety Act requires DOT to ''prescribe regulations requiring safety belts to be installed in motorcoaches[6] at each designated seating position'' not later than 1 year after the date of enactment of the Act. We have completed this final rule in furtherance of NHTSA's goal to enhance the safety of all heavy buses used in intercity bus transportation, while attending to the Motorcoach Enhanced Safety Act's focus on over-the-road buses.

This final rule is based on scientific data from an extensive test program completed in 2009 at NHTSA's Vehicle Research and Test Center (VRTC). The program began with a full-scale frontal 48 kilometers per hour (km/h) (30 miles per hour (mph)) barrier crash test of a 54-passenger over-the-road bus. The testing involved instrumented test dummies representing 50th percentile adult males, 5th percentile adult females, and 95th percentile adult males in belted and unbelted seating configurations. The weight of the bus as tested (including test dummies and equipment) was 19,377 kg (42,720 lb), which was less than the GVWR of the bus (~24,500 kg (54,000 lb)).[7] In the crash test, NHTSA analyzed the head accelerations (head injury criterion, (HIC)), neck injury (Nij) values, and other injury criteria measured by the test dummies, the kinematics of the dummies during the crash, and the structural integrity of the seats, floor and bus. Follow-on sled testing was also conducted to evaluate the performance of seat belt systems on motorcoach seats under a range of belted and unbelted conditions, and to evaluate seat anchorage strength testing.

Transportation by buses with a GVWR greater than 11,793 kg (26,000 lb) overall is a safe form of transportation. Data from NHTSA's Fatal Analysis Reporting System (FARS) shows that over the 10-year period between 2000 and 2009, there were 87 fatal crashes of buses covered by this final rule, resulting in 209 fatalities.[8] During this period, on average, 21 fatalities have occurred annually to occupants of these buses in crash and rollover events, with about 4 of these fatalities being drivers and 17 being passengers. However, while transportation on these buses is safe overall, given the typical high occupancy of the subject buses and the intercity operation of many of them at high speeds, when serious crashes do occur, a significant number of fatal or serious injuries can result, particularly when occupants are ejected.

A primary goal of this rulemaking is to reduce occupant ejections occurring in crashes of buses the NPRM identified as ''motorcoaches,'' i.e., buses with a GVWR greater than 11,793 kg (26,000 lb). Data from 2000–2009 FARS show that most fatal crashes of large buses involve buses with a GVWR greater than 11,793 kg (26,000 lb) and most of the fatal crashes involving these buses (55 percent) are rollover crashes. Ejections account for 66 percent of the fatalities in rollover crashes of these buses, 20 percent of the fatalities in non-rollover crashes and 45 percent of all fatalities. The risk of ejection can be reduced by seat belts, a simple and effective countermeasure. Seat belts are estimated to be 77 percent effective[9] in preventing fatal injuries in rollover crashes, primarily by preventing ejection.[10]

Another important goal is to improve passenger crash protection of the buses in crashes generally, particularly frontal crashes. Frontal crashes account for 42 percent of the fatalities involving buses with a GVWR greater than 11,793 kg (26,000 lb). Lap/shoulder[11] belts are estimated to be 29 percent effective in preventing fatal injuries in frontal crashes of the subject buses.[12] The ability of the belts to improve the passenger crash protection of heavy buses was demonstrated in our test program, which found that lap/shoulder belts prevented critical head and neck injury values from being exceeded for belted test dummies. (In contrast, unbelted test dummies and test dummies in lap-only belts measured head and neck injury values surpassing critical thresholds.) We also estimate lap/shoulder belts to be 42 percent effective in preventing side fatalities.[13]

[3] In 2009, DOT issued a Departmental Motorcoach Safety Action Plan, which is described later in this preamble. Today's final rule completes one of the principal rulemakings included in the DOT plan to enhance motorcoach safety. *http://www.fmcsa.dot.gov/documents/safety-security/MotorcoachSafetyActionPlan_finalreport-508.pdf*

[4] An over-the-road bus is a bus characterized by an elevated passenger deck located over a baggage compartment. See section 3038(a)(3) of the Transportation Equity Act for the 21st Century, cited in section 32702(6) of Subtitle G, the Motorcoach Enhanced Safety Act, of MAP–21.

[5] Certain bus types are excepted.

[6] Under the Motorcoach Enhanced Safety Act, ''motorcoach'' means an over-the-road bus, but does not include a bus used in public transportation provided by, or on behalf of, a public transportation agency, or a school bus.

[Footnote added.]

[7] GVWR means the value specified by the manufacturer as the loaded weight of a single vehicle (49 CFR 571.3). Under NHTSA's certification regulation (49 CFR Part 567), the GVWR ''shall not be less than the sum of the unloaded vehicle weight, rated cargo load, and 150 pounds times the number of the vehicle's designated seating positions. However, for school buses the minimum occupant weight allowance shall be 120 pounds per passenger and 150 pounds for the driver.''

[8] These data have been updated from the NPRM.

[9] Estimated based on Kahane, ''Fatality Reduction by Safety Belts for Front-Seat Occupants of Cars and Light Trucks,'' December 2000, Washington, DC, National Highway Traffic Safety Administration.

[10] We estimate that even at a minimum seat belt usage rate of only 6 percent, the rule will remain cost effective for the bus passengers.

[11] FMVSS No. 209, an equipment standard, currently applies to all seat belt assemblies installed in buses. FMVSS No. 209 uses the term ''Type 2 seat belt assembly'' to refer to a lap/shoulder belt system. As defined in that standard, a Type 2 seat belt assembly is ''a combination of pelvic and upper torso restraints.'' In this preamble, we use the term ''lap/shoulder'' belt system rather than ''Type 2 seat belt assembly'' for plain language purposes. Documents may occasionally refer to lap/shoulder belts as 3-point belts. Under FMVSS No. 209, a ''Type 1'' seat belt assembly is ''a lap belt for pelvic restraint.'' This preamble refers to Type 1 belts as ''lap-only belts.''

[12] This is discussed in NHTSA's Final Regulatory Impact Analysis (FRIA) that discusses issues relating to the estimated costs, benefits and other impacts of this regulatory action. The FRIA is available in the docket for this final rule and may be obtained by downloading it or by contacting Docket Management at the address or telephone number provided at the beginning of this document.)

[13] Estimated based on Morgan, ''Effectiveness of Lap/Shoulder Belts in the Back Outboard Seating Positions,'' June 1999, Washington, DC, National Highway Traffic Safety Administration. See FRIA.

Accordingly, to reduce the likelihood of occupant ejection and to improve occupant protection in all crashes, particularly frontal crashes, this final rule amends FMVSS No. 208, ''Occupant crash protection'' (49 CFR 571.208), under NHTSA's rulemaking authority set forth in the National Traffic and Motor Vehicle Safety Act (''Vehicle Safety Act'') (49 U.S.C. 30101 et seq.) and the Motorcoach Enhanced Safety Act. The standard is amended to:

- Require a lap/shoulder belt at all designated seating positions on all over-the-road buses,[14] including over-the-road buses used in public transportation,[15] but excluding school buses.
- For buses other than over-the-road buses, this final rule requires a lap/shoulder belt at all passenger seating positions on new buses with a GVWR greater than 11,793 kg (26,000 lb), except for certain excluded bus types.[16] (For buses other than over-the-road buses, we permit side-facing seats to be equipped with a lap belt, for reasons discussed later in this document.)
- Require a lap/shoulder belt at the driver's seating position on subject buses.[17]
- Require the lap/shoulder belt system for passenger seats to meet provisions for seat belt adjustment and fit, so that the seat belts can accommodate children as well as large (95th-percentile) adult males, be lockable for use with a child restraint system, and be releasable at a single point and by a pushbutton action.
- Require the seat belt anchorages, both torso and lap, on passenger seats to be integrated into the seat structure, so as not to impede emergency egress.

The ''performance requirement'' for the lap/shoulder seat belts is the FMVSS No. 210 strength requirement, measured in a static ''pull'' test. The seat belt assembly anchorages must meet the following FMVSS No. 210 requirement:

- Withstand a force of 13,345 Newtons (N) (3,000 lb) applied to the lap portion and a force of 13,345 N (3,000 lb) applied simultaneously to the torso portion of the seat belt assembly.

This final rule does not adopt a ''motorcoach'' definition. Comments responding to the NPRM expressed some confusion and disagreement over attaching the name of ''motorcoach'' to buses that may not have been widely thought of as motorcoaches in the past. In addition, the Motorcoach Enhanced Safety Act uses the term ''motorcoach'' differently than the NPRM. After considering these factors, we have determined that it is unnecessary to define the term ''motorcoach'' to accomplish the objective of this rulemaking. To avoid potential confusion over use of the term, and since the term is unnecessary, we have decided not to use the term ''motorcoach'' to describe the applicability of the lap/shoulder seat belt requirements. Instead, we have decided to simply amend FMVSS No. 208 such that the provisions of FMVSS Nos. 208 and 210 relevant to lap/shoulder belt and anchorages, respectively, are applied to (a) all over-the-road buses, and to (b) non-over-the-road buses with a GVWR greater than 11,793 kg (26,000 lb), excepting the few bus types.

We estimate that installing lap/shoulder seat belts on new subject buses will save approximately 1.7 to 9.2 lives and prevent 146 to 858 injuries per year (3.46–25.17 equivalent lives), depending on the usage of lap/shoulder belts in the buses (see Table 1 below).[18] The cost of installing lap/shoulder belts on new buses is estimated as follows (see Table 2 below). The incremental cost of adding a shoulder belt to the already required lap belt for drivers is estimated to be $18.86. With about 60 percent of the driver seating positions already equipped with lap/shoulder belts, the average bus cost will increase by $7.54. For the driver position, the total cost to the fleet of adding a shoulder belt to the driver seat for 40 percent of covered buses will add an additional $16,597 ($18.86 × 2,200 × .4).

The incremental cost of adding lap/shoulder belts and to change the seat anchorages for a two passenger seat is $78.14 or $39.07 per seating position. On a 54-passenger bus the cost for the passenger seats is $2,110 ($39.07 × 54). The total cost of adding lap/shoulder belts to all new 54-passenger buses is about $4.4 million ($2,110 × 2,100). The cutaway buses have seats for an average of 45 passengers. The incremental cost of adding lap/shoulder belts on a 45-passenger cutaway bus with two passengers per seat is $1,758 ($39.07 × 45). The total cost of adding passenger lap/shoulder belts to all new cutaway covered buses is about $0.2 million ($1,758.15 × 100). Thus, the total cost for all covered bus passenger positions is about $4.6 million. The total cost of adding lap/shoulder belts for passengers and shoulder belts to 40 percent of the driver's seats is $4.6 million ($4,606,353 + $25,238).

The agency has also estimated increased costs in fuel usage. The increased fuel costs depend on added weight (estimated to be 161 lb[19]) and the discount rate used. NHTSA estimates the increased costs in fuel usage for added weight and discounts the additional fuel used over the lifetime of the bus using a 3 percent and 7 percent discount rate. See the FRIA for more details.

The cost per equivalent life saved is estimated to be $0.3 million to $1.8 million (see Table 3 below). Annualized costs and benefits are provided in Table 4.

TABLE 1—ESTIMATED BENEFITS

Fatalities	1.7 to 9.2.
AIS 1 injuries (Minor)	89 to 536.
AIS 2–5 (Moderate to Severe)	57 to 322.
Total Non-fatal Injuries	146 to 858.

[14] There is no lower GVWR bound on the definition of over-the-road bus used in the Motorcoach Enhanced Safety Act and none adopted by this final rule for such buses. Nonetheless, as a practical matter, NHTSA is not aware of any bus meeting the over-the-road bus definition with a GVWR of less than 4,536 kg (10,000 lb).

[15] We are mindful that the Motorcoach Enhanced Safety Act excludes a bus used in public transportation provided by, or on behalf of, a public transportation agency from the meaning of ''motorcoach.'' However, as discussed in the NPRM and in this final rule, we are applying the final rule to over-the-road buses used for public transportation based on determinations we have made pursuant to NHTSA's Vehicle Safety Act authority, 49 U.S.C. 30111, which has existed and continues to exist prior to and separate from the Motorcoach Enhanced Safety Act provisions.

[16] The exceptions are transit buses, school buses, ''prison buses'' (buses manufactured for the purpose of transporting persons subject to involuntary restraint or confinement), and ''perimeter-seating buses'' (which the NPRM had referred to as buses with fewer than two rows of forward-facing seats. As explained in a later section of this preamble, we have decided it would be simpler to define a perimeter-seating bus by reference to the number of forward-facing seats it has than the number of rows it has. Note that, as a result of the Motorcoach Enhanced Safety Act, only buses other than over-the-road buses (which we sometimes refer to as ''non-over-the-road buses'') can be included in this excepted category of a perimeter-seating bus.

[17] The buses are all over-the-road buses, and non-over-the road buses with a GVWR greater than 11,793 kg (26,000 lb), except transit buses and perimeter-seating buses. This final rule also requires a lap/shoulder belt at the driver's seating position on school buses with a GVWR greater than 4,536 kg (10,000 lb).

[18] See FRIA for this final rule. The FRIA assumes that the seat belt use rate on buses regulated by today's rule will be between 15 percent and the percent use in passenger vehicles, which was 83 percent in 2008. These annual benefits accrue when all subject buses in the fleet have lap/shoulder belts.

[19] See FRIA for this final rule. This estimate is based on results from a NHTSA contractor conducting cost/weight teardown studies of motorcoach seats. The weight added by lap/shoulder belts was 5.96 per 2-person seat. This is the weight only of the seat belt assembly itself and does not include changing the design of the seat, reinforcing the floor, walls or other areas of the motorcoach.

TABLE 2—ESTIMATED COSTS

[2008 Economics]

	Per average vehicle	Total fleet ($millions)
Bus Driver	$7.54	$0.02
Bus Passenger	2,094	4.6
Fuel Costs @3%	1,077	2.4
Fuel Costs @7%	794	1.7
New Vehicle and Fuel Costs		
@3%	3,178	7.0
@7%	2,895	6.4

TABLE 3—COST PER EQUIVALENT LIFE SAVED

Cost per equivalent life saved	
50% Belt use for drivers and 15% Belt usage for passengers	$1.5 to $1.8 mill.
83% Belt usage for drivers and passengers	$0.3 to $0.43 mill.
Breakeven Point in passenger belt usage	4 to 5%.

TABLE 4—ANNUALIZED COSTS AND BENEFITS

[In millions of $2008 Dollars]

	Annualized costs	Annualized benefits	Net benefits
3% Discount Rate	$7.0	$28.5—158.6	$21.5 to 151.6.
7% Discount Rate	$6.4	$21.8—121.1	$15.4 to 114.7.

We have assessed the feasibility, benefits, and costs with respect to the application of the seat belt requirements to buses manufactured before the date on which this final rule applies to new vehicles. Based on that assessment, we have decided not to require retrofitting of used buses with seat belts. To learn more about retrofitting, the NPRM requested comment on issues concerning the structural viability of used buses to accommodate seat belts and the crash forces from belted passengers, the reinforcement needed to the bus structure to accommodate the loads, and the cost of retrofitting. Our hypothesis at the time of the NPRM was that the cost of and engineering expertise needed for a retrofitting operation would be beyond the means of bus owners (for-hire operators), many of which are small businesses.[20] The comments on the retrofit issue supported a finding that the impacts would be unreasonable. After considering the low likelihood that a retrofit requirement would be technically practicable at a reasonable cost, the cost impacts on small businesses, and the low benefits that would accrue from a retrofit requirement we have decided not to pursue a retrofit requirement for seat belts. (See FRIA discussion of cost/benefit of retrofit).

II. NHTSA's Statutory Authority

a. National Traffic and Motor Vehicle Safety Act

This final rule is issued under the National Traffic and Motor Vehicle Safety Act (''Vehicle Safety Act'') (49 U.S.C. 30101 *et seq.*). Under the Vehicle Safety Act, the Secretary of Transportation is responsible for prescribing motor vehicle safety standards that are practicable, meet the need for motor vehicle safety, and are stated in objective terms.[21] ''Motor vehicle safety'' is defined in the Vehicle Safety Act as ''the performance of a motor vehicle or motor vehicle equipment in a way that protects the public against unreasonable risk of accidents occurring because of the design, construction, or performance of a motor vehicle, and against unreasonable risk of death or injury in an accident, and includes nonoperational safety of a motor vehicle.''[22] ''Motor vehicle safety standard'' means a minimum performance standard for motor vehicles or motor vehicle equipment.[23] When prescribing such standards, the Secretary must consider all relevant, available motor vehicle safety information, and consider whether a standard is reasonable, practicable, and appropriate for the types of motor vehicles or motor vehicle equipment for which it is prescribed.[24] The Secretary must also consider the extent to which the standard will further the statutory purpose of reducing traffic accidents and associated deaths and injuries.[25] The responsibility for promulgation of

[20] The agency estimated in the NPRM that the service life of a motorcoach can be 20 years or longer. We estimated that the cost of retrofitting can vary substantially. To retrofit a vehicle with lap belts, we estimated it could cost between $6,000 (assuming that the motorcoach structure is lap belt-ready, and can accommodate the loads set forth in the NPRM) to $34,000 per vehicle to retrofit the vehicle with the lap belts and with sufficient structure to meet the NPRM's requirements. To retrofit it with lap/shoulder belts and reinforced structure so as to meet FMVSS No. 210 to support the loads during a crash, we estimated it could cost $40,000 per vehicle. The existing fleet size was estimated to be 29,325 motorcoaches. Hence, the fleet cost of retrofitting lap belts was estimated to range from $175,950,000 ($6,000 × 29,325) to $997,050,000 ($34,000 × 29,325), while the fleet cost of retrofitting lap/shoulder belts was estimated to be $1,173,000,000 ($40,000 × 29,325). These costs did not include increased remaining lifetime fuel costs incurred by adding structural weight to the motorcoach. Later in the analysis we examine a range of costs and include the lifetime fuel costs for the weight of the belts themselves. Weight would vary depending upon the needed structural changes, and lifetime fuel cost would vary depending upon the age of motorcoaches that would be retrofitted.

[21] 49 U.S.C. 30111(a).

[22] 49 U.S.C. 30102(a)(8).

[23] 49 U.S.C. 30102(a)(9).

[24] 49 U.S.C. 30111(b).

[25] Id.

Federal motor vehicle safety standards is delegated to NHTSA. (49 CFR 1.95)[26]

b. Motorcoach Enhanced Safety Act of 2012

On July 6, 2012, President Obama signed MAP–21, which incorporated in Subtitle G the ''Motorcoach Enhanced Safety Act of 2012,'' P.L. 112–141 (July 6, 2012). Section 32703(a) of the Act states that, not later than 1 year after the date of enactment of the Act, the Secretary shall prescribe regulations requiring safety belts to be installed in motorcoaches at each designated seating position. The Motorcoach Enhanced Safety Act also directs the Secretary to consider various motorcoach rulemakings, in provided timeframes, relating to improved roof support standards, advanced glazing standards and other portal improvements to prevent partial and complete ejection of motorcoach passengers, rollover stability enhancing technology, tire pressure monitoring systems, and tire performance standards. The Act also includes provisions on fire research, interior impact protection, enhanced seating designs, and collision avoidance systems, and the consideration of rulemaking based on such research. There also are provisions in the Motorcoach Enhanced Safety Act relating to improved oversight of motorcoach service providers, including enhancements to driver licensing and training programs and motorcoach inspection programs.

In Section 32702, ''Definitions,'' of the Motorcoach Enhanced Safety Act, the Act states at Section 32702(6) that ''the term 'motorcoach' has the meaning given the term 'over-the-road bus' in section 3038(a)(3) of the Transportation Equity Act for the 21st Century (49 U.S.C. 5310 note), but does not include a bus used in public transportation provided by, or on behalf of, a public transportation agency; or a school bus, including a multifunction school activity bus.'' Section 3038(a)(3) (49 U.S.C. 5310 note) states: ''The term 'over-the-road bus' means a bus characterized by an elevated passenger deck located over a baggage compartment.''

Section 32702(2) of the Act states: ''The term 'bus' has the meaning given the term in section 571.3(b) of title 49, Code of Federal Regulations (as in effect on the day before the date of enactment of this Act).'' 49 CFR 571.3(b) is a NHTSA regulation that defines ''bus'' as: ''a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.''

Section 32702(12) of the Motorcoach Enhanced Safety Act states: ''The term 'safety belt' has the meaning given the term in section 153(i)(4)(B) of title 23, United States Code.'' Section 153(i)(4)(B) of Title 23 defines ''safety belt'' as ''an occupant restraint system consisting of integrated lap shoulder belts.''

Under section 32703(e)(1) of the Act, any regulation prescribed in accordance with section 32703(a) (and several other subsections) shall apply to all motorcoaches manufactured more than 3 years after the date on which the regulation is published as a final rule, take into account the impact to seating capacity of changes to size and weight of motorcoaches and the ability to comply with State and Federal size and weight requirements, and be based on the best available science.

Section 32703(e)(2), ''Retrofit Assessment For Existing Motorcoaches,'' states: ''The Secretary may assess the feasibility, benefits, and costs with respect to the application of any requirement established under subsection (a) or (b)(2) to motorcoaches manufactured before the date on which the requirement applies to new motorcoaches under paragraph (1).'' The requirements of today's final rule were established under subsection (a).

Section 32706, ''Concurrence of Research and Rulemaking,'' states in paragraph (a) that, to the extent feasible, the Secretary shall ensure that research programs are carried out concurrently, and in a manner that concurrently assesses results, potential countermeasures, costs, and benefits. Paragraph (b), ''Authority to Combine Rulemakings,'' states: ''When considering each of the rulemaking provisions, the Secretary may initiate a single rulemaking proceeding encompassing all aspects or may combine the rulemakings as the Secretary deems appropriate.'' Paragraph (c), ''Considerations,'' states: If the Secretary undertakes separate rulemaking proceedings, the Secretary shall (1) consider whether each added aspect of rulemaking may contribute to addressing the safety need determined to require rulemaking; (2) consider the benefits obtained through the safety belts rulemaking in section 32703(a); and (3) avoid duplicative benefits, costs, and countermeasures.

Section 32711 of the Act states: Any standard or regulation prescribed or modified pursuant to the Motorcoach Enhanced Safety Act of 2012 shall be prescribed or modified in accordance with section 553 of title 5, United States Code.

c. Agency Views

At the time of the enactment of the Motorcoach Enhanced Safety Act, the agency's August 18, 2010 NPRM to require lap/shoulder belts in new buses with a GVWR greater than 11,793 kg (26,000 lb) had been published and work was close to completion in DOT on the final rule. Congress was aware of our progress on the agency's 2007 NHTSA's Approach to Motorcoach Safety Plan and the achievements of the Department's Motorcoach Safety Plan when it passed the statute. Given that the Motorcoach Enhanced Safety Act provides a very short timeframe (1 year) for issuance of a final rule, we believe that Congress intended that a final rule based on the 2010 NPRM would complete the rulemaking proceeding specified in section 32703(a) of the Act. This final rule fulfills the rulemaking mandate of section 32703(a).

We interpret the Motorcoach Enhanced Safety Act as providing us discretion in most areas, while limiting it in some. This regulation was initiated by NHTSA prior to enactment of Act and we are required by the statute to complete it in 1 year, and to complete it in such a way as to prescribe ''safety belts'' (lap/shoulder belts) at ''each designated seating position'' in the buses the statute calls ''motorcoaches'' (over-the-road buses except for buses used in public transportation provided by, or on behalf of, a public transportation agency, or school buses). This final rule achieves the Congressional goal that focuses on over-the-road buses[27] and requires all designated seating positions on the over-the-road buses to have lap/shoulder belts regardless of the seating configuration of the bus or the vehicle GVWR. To the extent discretion in our decision-making on a particular issue for over-the-road buses is limited by the Act, we have identified those circumstances in this preamble.

Yet, this regulation was initiated by NHTSA under the authority of the National Traffic and Motor Vehicle Safety Act (49 U.S.C. 30101 *et seq.*), prior to enactment of the Motorcoach

[26] The Secretary also delegated to NHTSA the authority set out for Section 101(f) of Public Law 106–159 to carry out, in coordination with the Federal Motor Carrier Safety Administrator, the authority vested in the Secretary by subchapter 311 and section 31502 of title 49, U.S.C., to promulgate safety standards for commercial motor vehicles and equipment subsequent to initial manufacture when the standards are based upon and similar to a Federal Motor Vehicle Safety Standard promulgated, either simultaneously or previously, under chapter 301 of title 49, U.S.C.

[27] An over-the-road bus is a bus characterized by an elevated passenger deck over a baggage compartment.

Enhanced Safety Act, and Congress was aware of the NPRM when it enacted the 2012 statute. NHTSA issued the NPRM under rulemaking authority that has existed and continues to exist prior to and separate from the 2012 Act. There is no provision in the Motorcoach Enhanced Safety Act limiting NHTSA's rulemaking authority under the Vehicle Safety Act to require belts on buses, other than specific mandate for ''over-the-road buses,'' which the statute defines. Thus, we believe that the Motorcoach Enhanced Safety Act calls for a regulation for ''over-the-road buses'' without limiting our authority under the Vehicle Safety Act to apply the regulation to other buses as NHTSA finds appropriate under the Vehicle Safety Act, including over-the-road buses used in public transportation, and buses other than over-the-road buses (e.g., body-on-frame buses) with a GVWR greater than 11,793 kg (26,000 lb).

Accordingly, this final rule requires lap/shoulder belts on buses other than those called ''motorcoaches'' in the Motorcoach Enhanced Safety Act. We also believe that NHTSA has wider decision-making discretion regarding those ''other buses,'' and is able to exclude a particular type of non-over-the-road bus from a requirement of the final rule if the agency finds good reason to do so. For example, for sound, practical reasons, including the safety of prison guards, this regulation does not require designated seating positions for prisoners on ''prison buses'' to have seat belts.

NHTSA is authorized under the Vehicle Safety Act to issue motor vehicle safety standards that ''shall be practicable, meet the need for motor vehicle safety, and be stated in objective terms'' (49 U.S.C. 30111(a)). When prescribing a motor vehicle safety standard, NHTSA considers, *inter alia,* relevant available motor vehicle safety information, whether a standard is reasonable, practicable, and appropriate for the particular type of motor vehicle or motor vehicle equipment for which it is prescribed, and the extent to which the standard will carry out the purpose and policy of the Act, i.e., reduce traffic accidents and deaths and injuries resulting from traffic accidents (49 U.S.C. 30111(b)). In exercising this authority, we have responded to the comments on the NPRM and assessed other information relevant to this rulemaking in a manner that ensures that the final rule meets the criteria of the Vehicle Safety Act, the Administrative Procedure Act, other relevant statutes and orders, and the particular statutory instructions of the Motorcoach Enhanced Safety Act.

As to the latter, among the matters we have taken into account are the impact on seating capacity and the impact on the size and weight of motorcoaches. We have considered the best available science. We have weighed the cumulative effect of our rulemakings and whether rulemaking could be combined. We have analyzed retrofit requirements. In sum, we have issued this final rule after careful deliberation of the factors emphasized for consideration in the Motorcoach Enhanced Safety Act, which we note are also factors NHTSA investigates carefully and as a matter of course when the agency conducts rulemaking under the National Traffic and Motor Vehicle Safety Act.

III. Background

a. The Agency's 2007 ''NHTSA's Approach to Motorcoach Safety'' Plan

In 2007, NHTSA undertook a comprehensive review of motorcoach (intercity bus) safety issues and the course of action that the agency could pursue to address them. The agency considered various prevention, mitigation, and evacuation approaches in developing the course of action. Many considerations were factored into determining the priorities, including: Cost and duration of testing, development, and analysis required; likelihood that the effort would lead to the desired and successful conclusion; target population and possible benefits that might be realized; and anticipated cost of implementing the ensuing requirements into the bus fleet.

The result was NHTSA's 2007 ''*NHTSA's Approach to Motorcoach Safety*'' plan (Docket No. NHTSA–2007–28793–001), in which we identified the following areas as the highest priorities for possible near term regulatory action to enhance the safety of the vehicles: (1) Passenger ejection; (2) rollover structural integrity; (3) emergency egress; and (4) fire safety. For passenger ejection (action (1)), we pursued the incorporation of passenger seat belts as the most effective and expeditious way to mitigate ejection.

Today's final rule completes the agency's initiative in achieving the first goal of the plan.[28]

b. DOT's 2009 Task Force Action Plan

In 2009, DOT issued a Departmental Motorcoach Safety Action Plan, which outlined a Department-wide strategy to enhance motorcoach safety.[29] In addition to the four priority action items specified in NHTSA's 2007 ''NHTSA's Approach to Motorcoach Safety'' plan, the DOT plan identified other strategies the Department will pursue to enhance motorcoach safety, such as pursuing electronic stability control (ESC) systems, event data recorders (EDR), and programs addressing driver fatigue and operator maintenance. On May 23, 2012, NHTSA issued an NPRM to establish a new Federal motor vehicle safety standard on ESC, to reduce rollover and loss of directional control crashes of truck tractors and large buses, including motorcoaches (77 FR 30766, Docket number NHTSA–2012–0065). Work is underway in NHTSA and the other DOT agencies on other motorcoach safety initiatives discussed in the plan.

c. NTSB Recommendations

The following NTSB recommendations relate to this final rule.

- H–90–75: Revise Federal Motor Vehicle Safety Standard 208, Occupant Crash Protection, to include a requirement that lap shoulder belt systems for the driver position be installed in all newly manufactured buses, including city, intercity, small, and large. (Class II, Priority Action).
- H–99–47 (''Most Wanted''): In 2 years, develop performance standards for motorcoach occupant protection systems that account for frontal impact collisions, side impact collisions, rear impact collisions, and rollovers.
- H–99–48: Once pertinent standards have been developed for motorcoach occupant protection systems, require newly manufactured motorcoaches to have an occupant crash protection system that meets the newly developed performance standards and retains passengers, including those in child safety restraint systems, within the seating compartment throughout the accident sequence for all accident scenarios.
- H–05–01: Develop performance standards for passenger seat anchorages in motorcoaches.
- H–10–002: To maintain consistency in bus body classifications and to clarify the scope of bus safety initiatives, develop regulatory definitions and classifications for each of the different bus body types that would apply to all U.S. Department of Transportation agencies and promote use of the

[28] NHTSA is completing work on a proposal with regard to action (2) on improving rollover structural integrity.

[29] *http://www.fmcsa.dot.gov/documents/safety-security/MotorcoachSafetyActionPlan_finalreport-508.pdf.* In the DOT plan, ''motorcoach'' is generally used to describe over-the-road buses (buses characterized by an elevated passenger deck over a baggage compartment).

definitions among the bus industry and state governments.

- H–10–003: In NHTSA's rulemaking to improve motorcoach occupant protection, include all buses with a GVWR greater than 10,000 lb, other than school buses.

H–90–75, H–99–47, H–99–48, H–05–01, H–10–002, and H–10–003

It should be noted that, at the time NTSB recommendations H–90–75, H–99–47, H–99–48, and H–05–01 were issued, there were no crash test data or countermeasure studies available. Today, the testing we conducted as part of the ''NHTSA's Approach to Motorcoach Safety'' plan provides extensive data upon which the agency has assessed the practicability of installing lap/shoulder belt systems on the affected buses and the potential effectiveness of the belts at passenger seating positions.[30]

H–90–75 recommended that we amend FMVSS No. 208 to require that lap/shoulder belt systems for the driver position be installed in all newly manufactured buses. This final rule adopts a lap/shoulder belt requirement for the driver's position of large school buses, all over-the-road buses, and non-over-the-road buses with a GVWR greater than 11,793 kg (26,000 lb) with certain exceptions.[31]

H–99–47 and H–99–48 requested us to develop performance standards for motorcoach occupant protection systems that account for frontal impact collisions, side impact collisions, rear impact collisions, and rollovers, and apply those standards to new motorcoaches. Today's final rule requires lap/shoulder belts at each passenger seating position in the affected buses, which includes all over-the-road buses. In the NHTSA test program conducted as part of our ''Approach to Motorcoach Safety'' plan, lap/shoulder belts on forward-facing seats were found to prevent elevated head and neck injury values and provided enhanced occupant protection compared to lap belts.

Addressing H–99–48, this final rule requires the lap/shoulder belts on passenger seating positions to meet FMVSS No. 208's ''lockability'' requirement (S7.1.1.5, 49 CFR 571.208). The requirement is for the lap belt to be lockable so as to secure child restraint systems tightly, without the need to attach a clip or any other device to the vehicle's seat belt webbing.

This final rule addresses H–05–01, which recommended that NHTSA develop performance standards for passenger seat anchorages in motorcoaches. This final rule requires that the lap/shoulder seat belt anchorages on the affected buses meet the anchorage strength requirements for lap/shoulder belts in FMVSS No. 210. Those existing strength requirements specify that each lap/shoulder belt be tested with a load of 13,345 N (3,000 lb) applied simultaneously to the lap and shoulder belt, for a total load of 26,690 N (6,000 lb). This requirement is based on test data from our research program, discussed in ''NHTSA's Approach to Motorcoach Safety'' plan, showing the 13,345 N (3,000 lb) strength requirement is needed to address loads that can occur in serious frontal crashes.

In issuing today's final rule, NHTSA carefully considered H–10–002, which asked NHTSA to develop regulatory definitions and classifications for each of the different bus body types that would apply to all DOT agencies. This issue is discussed in a later section of this preamble on the proposed ''motorcoach'' definition.

We also carefully considered H–10–003, which asked NHTSA to include buses with a GVWR of 4,536 kg (10,000 lb) or more in rulemaking to improve motorcoach occupant protection. NTSB and others raised this issue in comments on the NPRM, and our response on this issue is provided in the definition section of this preamble.

d. Congressional Mandate

On July 6, 2012, President Obama signed the ''Moving Ahead for Progress in the 21st Century Act'' (MAP–21),'' which incorporated in Subtitle G the ''Motorcoach Enhanced Safety Act of 2012.'' Section II of this preamble, above, summarizes the provisions of the Act relevant to this final rule.

IV. Safety Need

a. Introduction

Each year, the commercial bus industry transports millions of people between and in cities, for long and short distance tours, school field trips, commuter, and entertainment-related trips. According to the American Bus Association (ABA), there were approximately 3,400 motorcoach[32] carriers in the United States and Canada in 2007.[33] These motorcoach carriers operated over 33,000 motorcoaches, they logged nearly 750 million passenger trips, and they traveled over 1.8 billion miles yearly. Approximately 3,100 of the carriers were chartered U.S. carriers that operated about 29,000 motorcoaches.

According to the ABA report, the services provided by these commercial buses in 2007 included charter services (pre-formed group (organization, association, tour company, shuttle service, church, school, etc.) that hires a motorcoach for exclusive use under a fixed contract) (46.4 percent of the miles driven), scheduled service (specified, ticketed, predetermined regular-route service between cities or terminals) (26.5 percent of the miles driven), commuter service (transporting people between home and work) (10.3 percent of the miles driven), tour/sightseeing service (planned trip at fixed price for leisure and/or sightseeing) (8.2 percent of the miles driven), special operations (published, regular-route service to special events, or service for employees to work sites) (3.5 percent of the miles driven), and airport shuttle services (private motorcoaches used to enhance public transportation system service to and from the airport) (3.4 percent of the miles driven). In 2007, each motorcoach was driven an average of 56,000 miles. The majority of the motorcoach trips (65 percent) were made by children and senior citizens.

Although commercial bus transportation overall is a safe form of transportation in the U.S., a number of crashes in recent years have illustrated that fatal crashes of high-capacity buses, while a relatively rare event, can cause a significant number of fatal or serious injuries in a single event. Pursuant to the requirements of the Vehicle Safety Act, NHTSA developed its ''Approach to Motorcoach Safety'' plan and commenced the associated safety rulemakings to explore whether there are unreasonable safety risks associated with these buses, and if there are, whether the risks can be reduced in a reasonable manner by the issuance of crashworthiness and crash avoidance safety standards.

We started by analyzing fatal accident crash data from 2000–2009 to assess whether there are unreasonable safety risks associated with high-occupancy bus transportation. We analyzed data for buses with a GVWR greater than 4,536 kg (10,000 lb). The 2000–2009 FARS

[30] NHTSA's research program evaluating the performance of seat belt systems on motorcoach passenger seats is discussed in detail in the NPRM, Section V. See 75 FR at 50967. See also the FRIA for this final rule.

[31] Exceptions are transit buses and perimeter-seating buses.

[32] As used in the report, ''motorcoach'' refers to an over-the-road bus. When we discuss this report, we use the term motorcoach to mean an over-the-road bus.

[33] ''Motorcoach Census 2008, A Benchmarking Study of the Size and Activity of the Motorcoach Industry in the United States and Canada in 2007.'' Paul Bourquin, Economist and Industry Analyst, December 18, 2008.

data revealed that 83 percent of the fatalities in the buses were in buses with a GVWR greater than 11,793 kg (26,000 lb). We focused our rulemaking on those buses, effectively using agency resources.

FARS data show that over half of the fatalities in buses with a GVWR greater than 11,793 kg (26,000 lb) were attributable to rollovers, and that the vast majority of fatalities in rollovers were due to ejections.

NHTSA's research on passenger vehicle and motorcoach rollovers has shown that there exists a proven countermeasure (a lap/shoulder seat belt) that is readily available, practicable, and cost effective, that successfully mitigates the risk of ejection in rollovers. We have also found that nearly half of the fatalities in the covered vehicles were in non-rollover crashes, and that more than half of the fatalities in the 2000–2009 FARS files were not ejected. The potential benefit of lap/shoulder seat belts in reducing those non-ejection fatalities is also remarkable.

This final rule addresses the present occupant fatality risk in over-the-road buses and in other buses with a GVWR greater than 11,793 kg (26,000 lb), given the occurrence of fatality and serious injury in rollover and frontal crashes, and the proven protection afforded by lap/shoulder seat belts. Various commenters have urged us also to require lap/shoulder seat belts on all buses with a GVWR between 4,536 kg and 11,793 kg (10,000 lb and 26,000 lb). Although we decline to do so in today's rulemaking, we can continue our evaluation of whether belts should be required for all buses with a GVWR less than 11,793 kg (26,000 lb) after this final rule.

b. FARS Data

To identify the vehicles to which this rulemaking should apply, the agency examined FARS data files to understand characteristics and trends associated with bus fatal crashes.[34] FARS contains data on a census of fatal traffic crashes within the 50 States, the District of Columbia, and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a traffic way customarily open to the public, and must result in the death of an occupant of a vehicle or a non-occupant within 30 days of the crash.

In developing this rulemaking, we analyzed 10 years of FARS data for all high-occupancy buses, i.e., buses with a GVWR greater than 4,536 kg (10,000 lb). We analyzed these FARS data to understand the involvement of these buses in fatal crashes, and to develop a focused strategy for improving the crashworthiness and crash-avoidance attributes of such buses involved in fatal crashes. We did not include data for transit and school buses in this analysis, as these vehicles are not used as motorcoaches or coded as such in FARS, and were not the vehicles targeted by the NHTSA and DOT safety plans, or by the Motorcoach Enhanced Safety Act of 2012, as the subjects of this rulemaking initiative.

The FARS data analysis for fatalities of occupants in buses with a GVWR greater than 4,536 kg (10,000 lb) showed that 83 percent of the occupant fatalities were in buses with a GVWR greater than 11,793 kg (26,000 lb). That is, in these 10 years of data, one noteworthy attribute of the high-occupancy vehicles involved in fatal crashes was that in an overwhelming majority of cases, the GVWR of the vehicles was more than 11,793 kg (26,000 lb). Thus, based on these data, NHTSA determined that the vehicles of significance for this immediate rulemaking were buses with a GVWR greater than 11,793 kg (26,000 lb).[35] The FARS data indicated that these buses have a substantially higher involvement in fatal crashes involving passenger fatalities than buses with a GVWR of 4,536 kg to 11,793 kg (10,000 lb to 26,000 lb). The buses with a GVWR greater than 11,793 kg (26,000 lb) also had more involvement in rollover crashes resulting in occupant ejection than buses with a lighter GVWR.

c. Updated FARS Data

For the NPRM, the agency assumed that the vehicles of significance were coded in FARS as ''cross-country/intercity buses'' in the body type variable.[36] ''Cross-country/intercity buses'' is defined in FARS as buses designed to travel long distances between cities (e.g. Greyhound) and is represented by the over-the-road bus characterized by an elevated passenger deck located over a baggage compartment.

After the NPRM was published, we became aware that we had missed some FARS data that had been filed in the ''other buses'' and ''unknown buses'' FARS body type categories by crash investigators. To address this, when we updated the FARS data for this final rule to include the 2009 FARS data, we also examined 2000–2009 FARS data for ''other buses'' and ''unknown buses'' FARS bus body types. We expanded our analysis to make sure that we identified and examined FARS data for all high-occupancy bus crashes (GVWR greater than 4,536 kg (10,000 lb)).[37] We considered data from all three bus body type categories to assess the fatal crash involvement of buses with a GVWR greater than 4,536 kg (10,000 lb).

The findings of the reanalyzed 2000–2009 FARS data of all buses with a GVWR greater than 4,536 kg (10,000 lb) still showed the merits of focusing this particular rulemaking on buses with a GVWR greater than 11,793 kg (26,000 lb). These buses have a substantially higher involvement in fatal crashes involving passenger fatalities than buses with a GVWR of 4,536 kg to 11,793 kg (10,000 lb to 26,000 lb). Over the 10-year period (2000–2009), there were a total of 42 (7 drivers, 35 passengers) fatalities in cross-country/intercity buses, other buses, and unknown buses with a GVWR of 4,536 kg to 11,793 kg (10,000 lb to 26,000 lb). In contrast, among the cross-country/intercity buses, other buses, and unknown buses categories with a GVWR greater than 11,793 kg (26,000 lb), there were a total of 209 (41 drivers, 168 passengers) occupant fatalities[38] in crashes during the 10-year period (2000–2009). This number includes 134 occupant fatalities in cross-country/intercity buses, 47 in other buses, and 28 in unknown buses (see Table 5 and Figure 1 below).

[34] Previous discussion of the FARS data is set forth in the 2010 seat belt NPRM and in the DOT 2009 Motorcoach Action Plan, *http://www.nhtsa.gov/staticfiles/DOT/NHTSA/reports/HS811177.pdf*. In the DOT 2009 Motorcoach Action Plan, ''motorcoach'' referred to over-the-road buses only.

[35] In the NPRM, NHTSA described the GVWR criterion as 11,793 kg (26,000 lb) or greater, which was not consistent with FMCSA's criterion describing the affected class of commercial vehicles (GVWR greater than 11,793 kg (26,000 lb)). This final rule uses the FMCSA criterion (GVWR greater than 11,793 kg (26,000 lb) in describing the affected vehicles.

[36] The FARS database has five bus body type categories: (1) cross-country/intercity bus, (2) transit bus, (3) school bus, (4) other bus, and (5) unknown bus.

[37] By considering the data for buses categorized as cross-country/intercity buses, other buses, and unknown buses as relevant data, we are analyzing FARS data for all buses in FARS except data for transit buses and school buses. It is reasonable to exclude transit bus and school bus body types because those bus types are easily recognized and categorized as such by crash investigators and those coding the FARS data. By considering all data for the cross-country/intercity bus, other bus and unknown bus categories, today's final rule analyzes all available FARS data relevant to ''motorcoach'' and other bus fatal crashes.

[38] There were 232 occupant fatalities in the affected buses in this 10-year period but 23 fatalities occurred due to a fire (Wilmer, Texas motorcoach fire) and were not related to a crash event. To accurately assess the fatality, NHTSA did not include the 23 Wilmer, Texas fatalities since those were not crash-related.

TABLE 5—NUMBER OF BUS OCCUPANT FATALITIES IN CRASHES BY BUS BODY TYPE, GVWR, AND OCCUPANT TYPE. FARS 2000–2009 DATA FILES

GVWR (lb)	Bus body type							
	Cross-country		Other		Unknown		Total	
	Driver	Pass	Driver	Pass	Driver	Pass	Driver	Pass
10,000–26,000	0	2	5	26	2	7	7	35
>26,000	22	112	11	36	8	20	41	168

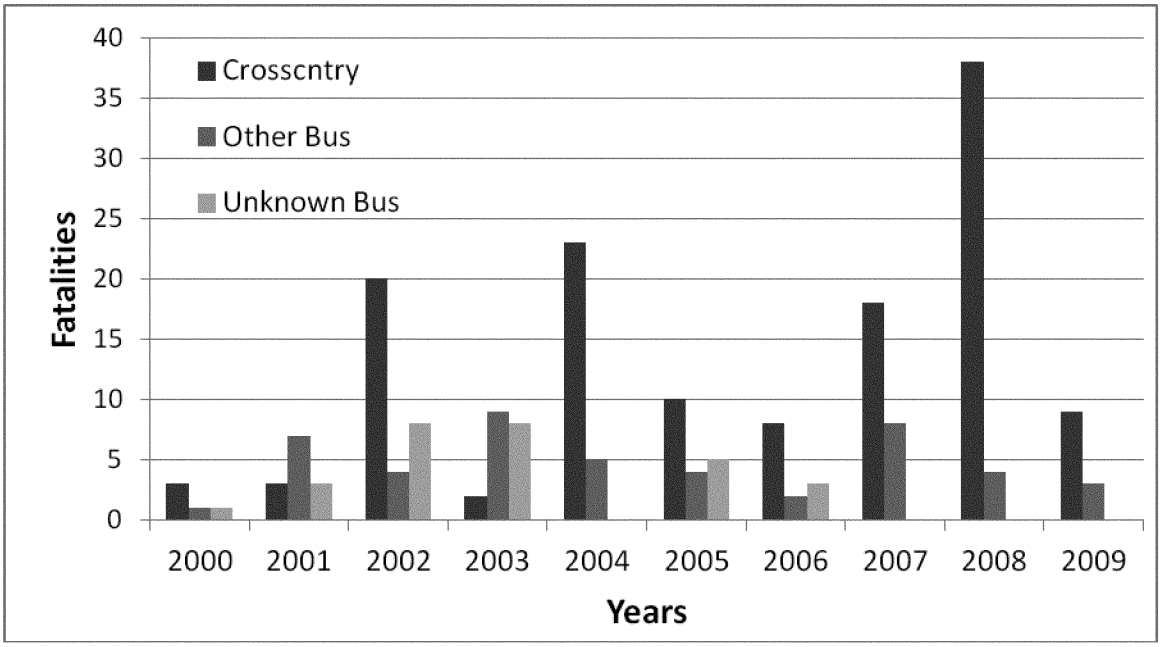

Figure 1: Number of bus occupant fatalities in crashes involving cross-country, other, and unknown buses with a GVWR > 11,793 kg (26,000 lb) except for transit and school buses (categorized by bus body type). (FARS 2000-2009 data files.)

To promulgate a ''motorcoach'' lap/shoulder seat belt standard most effectively, expeditiously, and most closely aligned with NHTSA's Vehicle Safety Act, the Motorcoach Enhanced Safety Act, and the NHTSA and DOT motorcoach safety plans, the agency has focused this particular rulemaking on all over-the-road buses and other buses with a GVWR greater than 11,793 kg (26,000 lb). The present crash data indicate a current need to require lap/shoulder seat belts in buses with a GVWR greater than 11,793 kg (26,000 lb).[39] We can examine buses with a GVWR less than or equal to 11,793 kg (26,000 lb) in a separate action, where information specific to those buses could be more closely analyzed. Safety is our highest priority, and we will continuously work to adopt practical measures that make our transportation systems safer.

Fatality Trends for Buses With a GVWR Greater Than 11,793 kg (26,000 lb)

Among the 209 occupant fatalities in buses with a GVWR greater than 11,793 kg (26,000 lb) in the 10-year period (2000–2009), the FARS data show that 168 (80 percent) were passengers, and 41 (20 percent) were drivers. In addition, the data show that 64 percent of the fatalities were in cross-country/intercity buses and 36 percent were in the other bus and unknown bus categories (see Table 5 above).

As shown in Figure 1, fatalities in the affected vehicles in certain years were significantly higher than average. There were 28 or more occupant fatalities in the covered buses in 2002, 2004, and 2008. We note that such increases in the fatality statistics were often attributable to a small number of serious crashes during the year which caused a large number of fatalities.

For example, the majority of fatalities in 2004 resulted from a crash in Arkansas, which involved an over-the-road bus hitting a highway signpost and subsequently rolling over. The rollover and partial detachment of the roof resulted in the ejection of all 30 occupants. This crash resulted in 15 fatalities, including the driver. All 14 passengers who died in this crash were ejected.

The 42 passenger fatalities in the covered buses in 2008 were mainly a result of 3 separate crashes. The first event was a rollover crash that occurred in Mexican Hat, Utah, where the over-the-road bus overturned as it departed the roadway and rolled one full turn, striking several rocks in a drainage ditch bed at the bottom of the embankment, and came to rest on its wheels. The roof of the bus separated from the body, and 51 of the 53 occupants were ejected. Nine passengers were fatally injured

[39] We note that, consistent with the Motorcoach Enhanced Safety Act, today's final rule includes over-the-road buses with a GVWR less than 11,793 kg (26,000 lb). However, the FARS data in Table 1 shows only 2 fatalities in over-the-road buses (coded as cross-country by FARS) with a GVWR of 4,536 kg to 11,793 kg (10,000 lb to 26,000 lb). These are most likely miscoded. Thus, the field data analysis focuses on buses with a GVWR greater than 11,793 kg (26,000 lb).

and 43 passengers and the driver received various injuries.

The second 2008 event was a crash in Sherman, Texas, where the over-the-road bus went through the bridge railing and off the bridge about 15 feet above a creek, then rolled onto its side. Seventeen passengers died in the crash.

The third 2008 event was a rollover crash near Williams, California, where the over-the-road bus flipped and rolled into a ditch, killing 9 people and injuring more than 30 others. Approximately a dozen passengers were ejected from the bus.

Rollover and Ejection Statistics

Using the aforementioned FARS bus body type categories (cross-county/intercity, other buses and unknown buses), the agency examined the 2000–2009 FARS data for vehicles with a GVWR greater than 11,793 kg (26,000 lb) to understand more about the fatal crashes. The FARS data show that rollovers account for more than half of the occupant fatalities in crashes of the affected buses. Figure 2, below, shows the 209 fatalities in the affected buses categorized by rollover/first impact point for the 10-year period 2000–2009. If a bus had been involved in a rollover, it is categorized as a rollover crash since a rollover is generally the most harmful event in a crash and results in most of the passenger fatalities. Buses not involved in a rollover are categorized by first impact point (front, side, and rear).

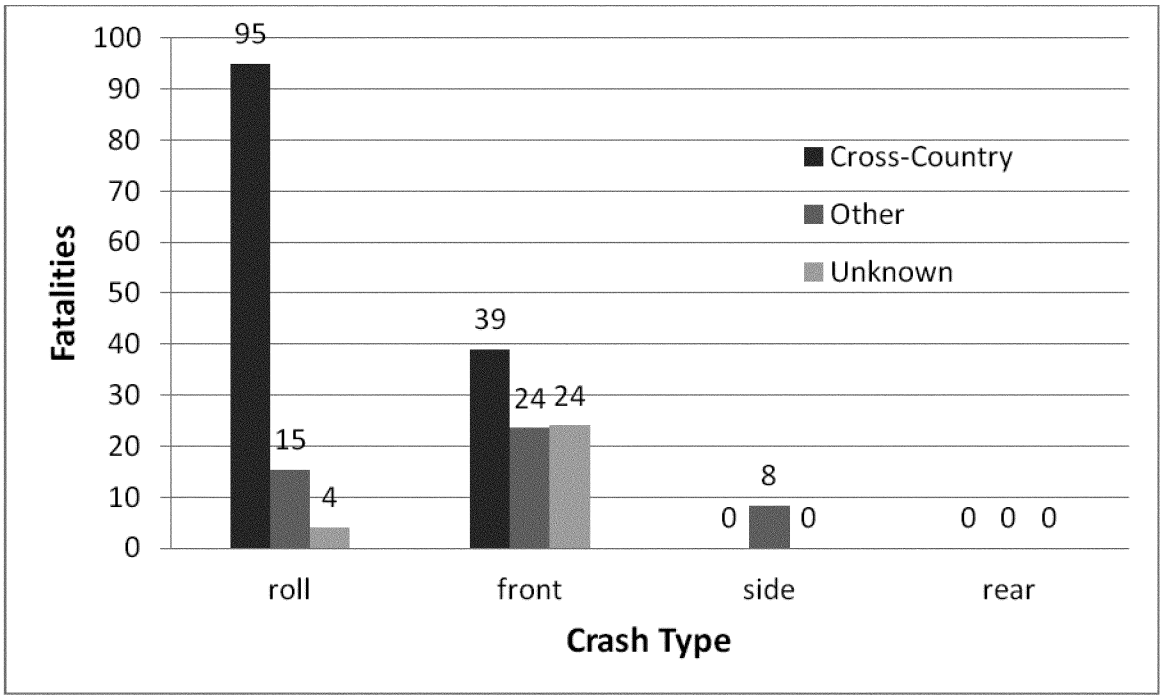

Figure 2. Number of occupant fatalities in cross-country, other, and unknown buses with a GVWR > 11,793 kg (26,000 lb) except for transit and school buses (categorized by rollover/first impact point and bus body type). (2000-2009 FARS data)

Among the 209 occupant fatalities in buses with a GVWR greater than 11,793 kg (26,000 lb) (2000–2009 FARS data), rollovers accounted for 114 fatalities (55 percent). There were no fatalities in side impacts in cross-country and unknown bus body type categories and no fatalities in rear impacts for all three bus body type categories.

The agency further examined these data and found that a majority of fatalities in rollover crashes of buses with a GVWR greater than 11,793 kg (26,000 lb) involved occupant ejections. Figure 3 shows the distribution of fatalities in rollover crashes of cross-country, other, and unknown buses with a GVWR greater than 26,000 lb, by occupant type and ejection status. For the 10-year period from 2000 to 2009, there were 32 fatal rollover crashes, resulting in 114 fatalities. In these rollover crashes, two-thirds (75 out of 114) of the fatalities were occupants who were ejected. Three drivers (3 percent) involved in rollover crashes were ejected.

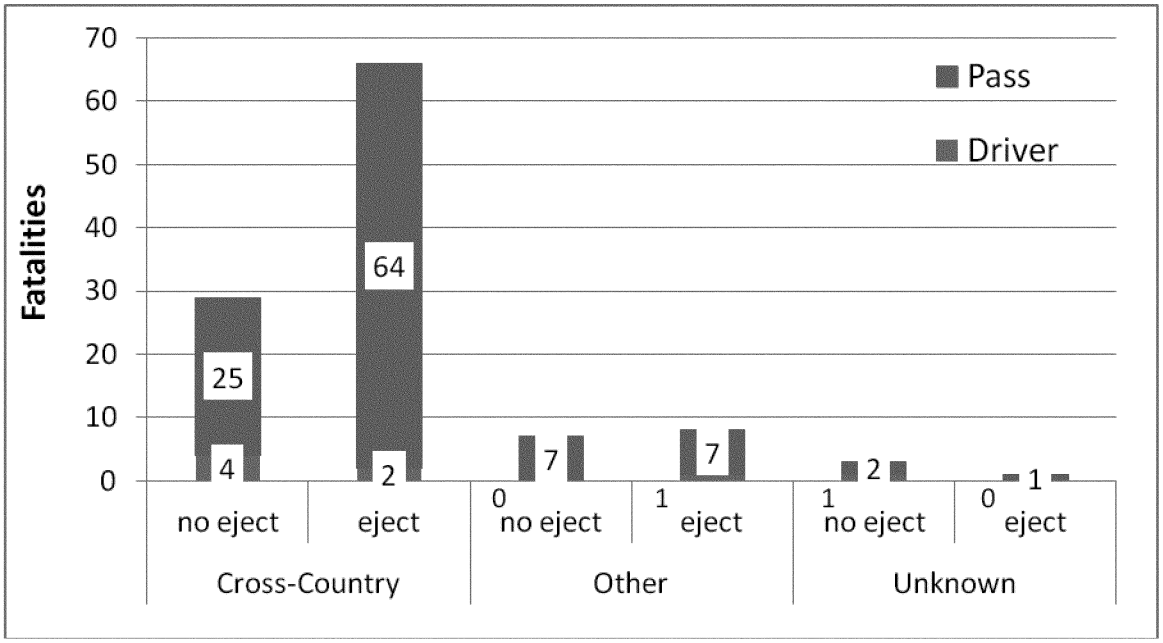

Figure 3. Number of rollover fatalities in cross-country, other, and unknown buses with a GVWR > 11,793 kg (26,000 lb) except for transit and school buses (among drivers and passengers by ejection status and bus body type) (2000-2009 FARS data)

Figure 4 shows ejection status as related to the occurrence of rollovers of the covered buses. For non-rollover crashes there were 95 fatalities, or 45.5 percent (95/209) of the total. In non-rollover crashes only 20.0 percent (19/95) of the 95 fatalities were ejected. Considering all crash types, fatalities were split nearly equally between ejected (45.0 percent (94/209)) and non-ejected (55.0 percent (115/209)).

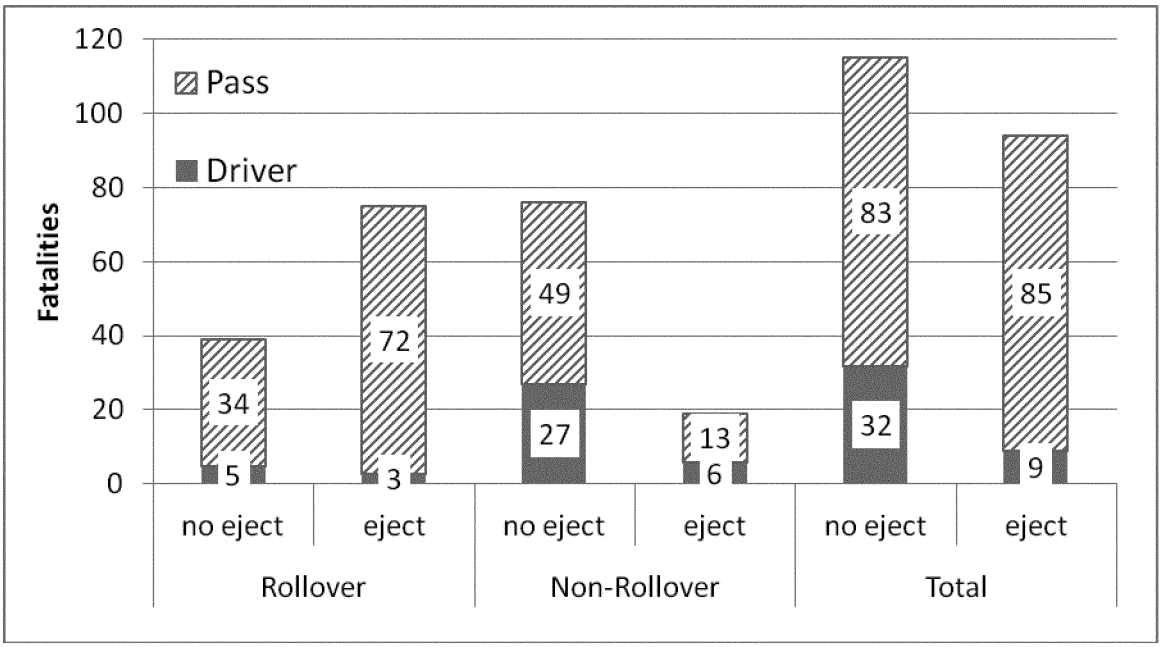

Figure 4 – Fatalities by ejection status and rollover occurrence, in cross-country, other and unknown bus body types with a GVWR > 11,793 kg (26,000 lb)); FARS 2000-2009

V. Summary of the NPRM

The FARS data showed that rollovers accounted for 55 percent of fatalities in buses with a GVWR greater than 11,793 kg (26,000 lb). Further, the vast majority of fatalities in rollover crashes of these covered buses involved occupant ejections. NHTSA proposed in the August 18, 2010 NPRM to amend FMVSS No. 208 to require lap/shoulder belts at all passenger seating positions on ''motorcoaches,'' which the NPRM identified as buses with a GVWR greater than 11,793 kg (26,000 lb).[40] The agency focused the NPRM on these buses to address the ejection safety problem as quickly as possible, and to improve occupant protection in frontal crashes. NHTSA's bus research showed that lap/shoulder belts would improve the survivability of occupants in frontal crashes even when a rollover was not involved.

To define the types of vehicles to which the amended requirements would apply, the NPRM proposed to add a definition of ''motorcoach'' to 49 CFR Part 571.3 and to apply FMVSS No. 208's amended requirements to ''motorcoaches.'' The proposed definition was as follows:

> [Proposed definition] *Motorcoach* means a bus with a gross vehicle weight rating (GVWR) of 11,793 kilograms (26,000 pounds) or greater, 16 or more designated seating positions (including the driver), and at least 2 rows of passenger seats, rearward of the driver's seating position, that are forward-facing or can convert to forward-facing without the use of tools. *Motorcoach* includes buses sold for intercity, tour, and commuter bus service, but does not include a school bus, or an urban transit bus sold for operation as a common carrier in urban transportation along a fixed route with frequent stops.

The NPRM proposed to modify FMVSS No. 208 to require lap/shoulder belts at each seating position (except side-facing seats were permitted to have either a lap or a lap/shoulder belt), require the belts to be integral to the seat (except the driver seat) and to meet current FMVSS No. 208 provisions for seat belt adjustment, fit, lockability, and release. By virtue of the FMVSS No. 208 requirement for lap/shoulder belts at each seat, the NPRM proposed the lap/shoulder belt anchorages meet FMVSS No. 210, which specifies a force of 13,345 N (3,000 lb) applied simultaneously to the lap and torso portions of the belt assembly.

VI. Overview of the Comments

NHTSA received approximately 130 comments on the NPRM. Comments were received from consumer and other groups, individuals, bus seat suppliers, bus manufacturers and industry groups, and motorcoach owners and operators.

This section provides a high-level overview of the comments, and focuses mainly on the reaction of the commenters to the general issue of whether lap/shoulder belts should be required for motorcoach passengers. We note below the general support or opposition to that issue, but readers should keep in mind that there were many issues in the NPRM to which commenters replied. Summaries of responses to sub-issues are provided, to the extent relevant, in the appropriate sections of this preamble.

Many consumer and other groups strongly supported the proposal that lap/shoulder belts be provided for motorcoach passengers. Commenters supporting the proposal included: NTSB, Consumers Union, Advocates for Highway Safety, Center for Automotive Safety, National Association of Bus Crash Families/West Brook Bus Crash Families, groups representing pediatricians, child passenger safety advocates, and school bus transportation organizations, and private individuals. Of the approximately 42 individual members of the public commenting on the NPRM, over 31 supported the proposed requirement for lap/shoulder belts.

The 10 individual members of the public opposing the proposed requirement for lap/shoulder belts generally cited the low annual number of motorcoach fatalities, low seat belt use, poor comfort, difficulty of enforcing use, and a perceived high cost per life saved. Many suggested that efforts should be placed on ''more meaningful'' safety reforms than seat belts, such as driver training programs, limiting the driver's operating hours and/or distance traveled between breaks, and monitoring driver performance. The People's Republic of China opposed the NPRM, stating that seat belts should be optional except for seats in rows that lack ''obvious shielding'' (e.g., the first row).

Seat suppliers IMMI[41] and American Seating supported the proposed seat belt requirement, as did the Automotive Occupant Restraints Council.[42]

Bus manufacturers and associations mostly did not overtly support or oppose the proposal, but most expressed concern about one or more aspects of it. Motor Coach Industries (MCI), a motorcoach manufacturer, stated that the NPRM's claiming that seat belts would enhance rollover protection was speculative and that NHTSA should conduct more research on this subject. Turtle Top, a bus manufacturer, asked that seat belts be a safety option. Blue Bird, a bus and school bus manufacturer, indicated that it supported NHTSA's efforts, but asked that NHTSA exclude buses that met Federal school bus roof crush and occupant protection (lap belt) requirements. Several European bus manufacturers (Van Hool, Setra) stated that the FMVSS No. 210 seat belt anchorage requirement will cause seat backs to be too rigid, and suggested we adopt European belt anchorage requirements instead. Several bus manufacturers asked for a ''prison bus'' exclusion.

Motorcoach transportation providers were divided in their reaction to the proposed requirement for lap/shoulder seat belts. The operators of the larger fleets in the industry were supportive of the proposal. There was concern about costs associated with the upkeep and maintenance of seat belts and enforcement of belt use. The majority of smaller transportation providers opposed having seat belts for passenger seating positions. Most of these commenters cited the excellent overall safety record for their industry, and expressed concerns about increased cost, possible low seat belt use rate, and difficulties in enforcing seat belt use. About 30 submitted a form letter that stated that the costs associated with a retrofit requirement would put many companies out of business since they are already operating at or close to a loss.

An issue in the NPRM on which many commented was: To which vehicles should lap/shoulder seat belt requirements apply, i.e., the proposed definition of ''motorcoach.'' Many consumer groups, seat suppliers, and some bus manufacturers supported applying the seat belt requirements to all buses with a GVWR greater than 4,536 kg (10,000 lb). Many bus manufacturers believed that the proposal did not clearly differentiate between motorcoaches and ''transit buses.'' A number of bus manufacturers

[40] Exceptions were transit and school buses and buses with fewer than two rows of forward-facing seats. Also, as noted earlier, the NPRM stated ''GVWR of 11,793 kg (26,000 lb) or more,'' when it should have stated ''GVWR greater than 11,793 kg (26,000 lb)'' to be consistent with FMCSA regulations. The latter term is also consistent with other NHTSA standards, which use the ''GVWR greater than'' phrasing rather than the ''GVWR of X or more.''

[41] IMMI was founded as Indiana Mills and Manufacturing, Inc. IMMI also manufactures seat belt systems.

[42] In 2011 the organization changed its name to the Automotive Safety Council (ASC).

wanted to reduce the reach of the definition and exclude more bus types. Many commenters had questions about or suggested changes to various components of the proposed definition.

VII. Differences Between the Final Rule and the NPRM

The most significant differences between this final rule and the NPRM are described briefly below. Less significant changes are discussed in the appropriate sections of this preamble.[43]

This final rule does not adopt a ''motorcoach'' definition. We have determined that it is unnecessary to define ''motorcoach'' to accomplish the objective of this rulemaking. Instead, it amends FMVSS No. 208 to require seat belts and the associated requirements at all seating positions on over-the-road buses and on buses, other than over-the-road buses, with a GVWR greater than 11,793 kg (26,000 lb), with the exception of certain bus types.[44] Further, simply applying FMVSS No. 208 and 210 to all over-the-road buses and to other buses based on the GVWR criterion avoids some confusion associated with using the term ''motorcoach'' to describe certain buses that may not have been widely thought of as motorcoaches in the past or described as such by the Motorcoach Enhanced Safety Act.

The proposed GVWR criterion of 11,793 kg (26,000 lb) has been slightly changed to ''GVWR greater than 11,793 kg (26,000 lb)'' from ''GVWR of 11,793 kg (26,000 lb) or greater.'' The one-pound change was made to make the GVWR cut-off more consistent with the regulations of FMCSA, which refer to the ''greater than 11,793 kg (26,000 lb)'' terminology in applying its regulations to commercial vehicles.

The definition of ''motorcoach'' proposed in the NPRM excluded buses with fewer than two rows of passenger seats, rearward of the driver's seat, that are forward-facing or can convert to forward-facing. The intent of this exclusion was to assure that buses whose seating configuration was primarily around the perimeter of the bus would not need to install seat belts.[45] For simplification, we have decided to exclude such perimeter-seating buses by referring to the number of forward-facing designated seating positions (DSPs) rearward of the driver (7 or fewer DSPs) rather than refer to the term ''row,'' which is not defined in 49 CFR 571.3. However, as noted in the footnote above, because of the Motorcoach Enhanced Safety Act, only non-over-the-road buses can be included in this excepted category of a perimeter-seating bus.

The transit bus exclusion now refers to a simple description of a physical feature typically present on a transit bus—the passenger ''stop request'' system—to identify a transit bus under the rule.

The passenger seats in buses used for the transport of passengers under physical restraint (prison buses) are also excluded from the seat belt requirements adopted today. However, as noted in the footnote above, because of the Motorcoach Enhanced Safety Act, only non-over-the-road buses can be included in this excepted category of prison bus.

VIII. Motorcoach Definition

The Vehicle Safety Act requires the FMVSSs to be appropriate for the vehicle type to which they apply. Each FMVSS specifies the vehicle types subject to the standard.

The vehicles affected by this final rule currently fall under the definition of ''bus'' for the purposes of applying the FMVSSs (49 CFR Section 571.3) and must comply with the FMVSSs that apply to buses, consistent with GVWR specifications. A ''bus'' is defined in § 571.3 as ''a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.'' Some FMVSSs (or requirements within those standards) apply to buses with a GVWR equal to or less than 4,536 kg (10,000 lb), others apply to buses with a GVWR greater than 4,536 kg (10,000 lb), and some apply to buses without distinguishing GVWR.

The agency issued the NPRM to reduce the risk of ejection in intercity transport buses (75 FR at 50969). A ''motorcoach'' definition was proposed ''to define the vehicle type to which the proposed requirements apply and to distinguish motorcoaches from other bus types.'' *Id.*

NHTSA typically analyzes the construction type and the purpose for which the vehicle is being built when the agency establishes a vehicle class for the FMVSSs. NHTSA has defined a number of motor vehicle types in 49 CFR 571.3, including: passenger cars, multipurpose passenger vehicles (MPVs), trucks, buses, trailers, and motorcycles. For the most part, for purposes of objectivity and to facilitate the ability of manufacturers to know at the time of vehicle manufacture which FMVSS the vehicle must meet, and the ability of dealers knowing at the time of vehicle sale which vehicles may be sold, the agency seeks to define vehicles by their attributes and construction features rather than by their purported intended use.[46] To make manufacturers' and dealers' responsibilities in meeting the Vehicle Safety Act as clear as possible, NHTSA sought to define ''motorcoach'' using reference to relevant visible attributes and construction characteristics rather than by the intended use of the vehicles, or some other factor determined after manufacture or sale.

NHTSA reviewed various definitions used in motorcoach safety legislation. The Motorcoach Enhanced Safety Act defines the term ''motorcoach'' as the meaning given the term ''over-the-road bus'' in section 3038(a)(3) of the Transportation Equity Act for the 21st Century (TEA–21).[47] Section 3038(a)(3) of TEA–21 states that the term ''over-the-road bus'' means a bus characterized by an elevated passenger deck located over a baggage compartment.

TEA–21's definitions also include the following:

- The term ''intercity, fixed-route over-the-road bus service'' means regularly scheduled bus service for the general public, using an ''over-the-road bus,'' that (a) operates with limited stops over fixed routes connecting two or more urban areas not in close proximity; (b) has the capacity for transporting baggage carried by passengers; and (c) makes meaningful connections with scheduled intercity bus service to more distant points.
- The term ''other over-the-road bus service'' means any other transportation using over-the-road buses including local fixed-route service, commuter service, and charter or tour service (including tour or excursion service that

[43] For the convenience of the reader, we have placed in the docket for this final rule a memorandum that describes this final rule's changes to the organization of FMVSS No. 208.

[44] The exceptions are transit buses, school buses, ''prison buses'' (buses manufactured for the purpose of transporting persons subject to involuntary restraint or confinement), and ''perimeter-seating buses'' (which the NPRM had referred to as buses with fewer than two rows of forward-facing seats). Note that under the Motorcoach Enhanced Safety Act, only non-over-the-road buses can be included in these excepted categories of prison bus and perimeter-seating bus. The Act requires each designated seating position on an over-the-road bus to have a lap/shoulder belt.

[45] Perimeter seating is exemplified by a single forward-facing row of seats at the back of the vehicle, inward-facing seats and a large luggage rack, along the side walls. This configuration is intended to increase the speed and ease of passenger boarding and alighting, such as for airport shuttle buses.

[46] An exception is the ''school bus'' definition, which is statutory in origin and which refers to the intended purpose for which the vehicle is sold.

[47] The Motorcoach Enhanced Safety Act states also that the term does not include a bus used in public transportation provided by, or on behalf of, a public transportation agency; or a school bus, including a multifunction school activity bus.

includes features in addition to bus transportation such as meals, lodging, admission to points of interest or special attractions or the services of a tour guide).

We believed that the definitions referring to over-the-road buses or over-the-road bus service were too narrow for our purpose, because a number of intercity transport buses involved in fatal crashes were body-on-chassis buses that lacked an elevated passenger deck over a baggage compartment. The issue of body-on-chassis buses is discussed further below. Further, as explained above, definitions that were based on the intended use of the vehicle could pose difficulties for manufacturers and dealers, since the intended use of a vehicle might not be known at the time of vehicle manufacture or sale. We wanted to make sure as reasonably possible that the buses we most wanted to affect (high-capacity buses associated with known fatality and injury risks) would meet the ''motorcoach'' safety standards, without having to depend on the state of knowledge of persons in the manufacturing and distribution chain about the prospective use of the bus.

We were also concerned that the meaning of some of the terms used in the above definitions was not sufficiently objective for use in the FMVSSs. Examples of these are: ''regularly scheduled,'' ''two or more urban areas not in close proximity,'' and ''meaningful connections . . . to more distant points.''

Currently, there is no common Departmental or industry definition of ''motorcoach.'' FMCSA does not have a definition for motorcoach in its regulations, but it considers a ''motorcoach'' to be an over-the-road bus. As noted above, over-the-road buses are a subset of the buses NHTSA believed should be regulated as ''motorcoaches,'' encompassing a part of but not enough of the heavy bus safety problem we seek to address.

In developing criteria for defining motorcoaches, we also examined other countries' approaches. For countries that have adopted United Nations Economic Commission for Europe (ECE) regulations, motorcoaches are defined as Class III, M3 vehicles. Class III, M3 vehicles are defined as having occupant seating locations for more than 8 passengers, vehicle weights in excess of 5 metric tons (11,023 lb) and are not designed to carry standing passengers. We consider this ECE definition too broad for us to use as a definition of motorcoach, as it captures vehicles that are not subject to today's lap/shoulder seat belt standard. The ECE definition includes vehicles that are not ''buses'' under 49 CFR 571.3.[48] Our discussion of the GVWR criterion is discussed further later in this section. Further, the reference to ''not designed to carry standing passengers'' would not be sufficiently objective for our purposes, as people could reasonably disagree as to whether a particular design allowed or did not allow standees.

We examined the terms used in FARS. The FARS database uses the following description of a motorcoach: ''Cross Country/Intercity Bus (e.g., Greyhound).'' Other descriptive information is also collected in the bus use sub-category, i.e., commuter, tour, scheduled service, shuttle, etc. For our purposes, as explained in the NPRM (75 FR at 50970), the FARS bus body type definition for ''Cross Country/Intercity'' and the use-based sub-categories are not appropriate. One problem is that these terms lack sufficient specificity. In addition, the use-based subcategories are problematic simply because they describe use and not physical characteristics, which limits their potential efficacy in determining the appropriate applicability of the FMVSS at time of vehicle manufacture and sale. The FARS designations are not clear enough to give manufacturers and dealers knowledge of the FMVSSs the bus must meet at the time of manufacture or sale of the vehicle.

In developing the NPRM, NHTSA sought to develop a motorcoach definition as an expedient means of applying FMVSSs to the vehicles targeted by the agency's safety plan. The vehicles of interest were high-occupancy buses associated with a known fatality and injury risk. The buses typically carried a large number of passengers and were operated at highway speeds. Specific safety risks addressed by the NHTSA plan were the risks of ejection, prolonged emergency egress from the vehicles, fire risk, and structural vulnerability to roof loading in a rollover event.

To develop a definition for application of these safety initiatives, we examined the involvement of high-occupancy buses[49] in fatal crashes over a 10-year period (FARS data files, for the NPRM, 1999–2008; for the final rule, 2000–2009). In this examination of high-occupancy bus data, we inspected crash data for buses with a GVWR greater than 4,536 kg (10,000 lb). We analyzed the construction type and various attributes of the vehicles. The 2000–2009 FARS data show that for buses over 4,536 kg (10,000 lb), only 17 percent of the passenger fatalities were in buses with a GVWR less than 11,793 kg (26,000 lb), but that 83 percent of the fatalities were in buses with a GVWR greater than 11, 793 kg (26,000 lb).

We reviewed the underlying chassis structure of high-occupancy vehicles involved in fatal crashes. Some had a monocoque[50] structure with a luggage compartment under the elevated passenger deck (''over-the-road buses''). However, an elevated passenger deck over a baggage compartment was not an element common to the buses involved in fatal intercity transport. In FARS data for buses with a GVWR greater than 11,793 kg (26,000 lb), 36 percent of the fatalities were in the other bus and unknown bus categories, i.e., not in the over-the-road bus category. Some buses were built using body-on-chassis configurations.

We believe that body-on-chassis configurations are newer entrants into the motorcoach services market. They appear to be increasing in number. A cursory review of the types of buses being used in the Washington, DC area for motorcoach services showed that traditional motorcoaches are generally used for fixed-route services between major metropolitan areas. However, for charter, tour, and commuter transportation from outlying areas, many bus types are used. Some are of monocoque structure, while others are of body-on-chassis structure.

The review of the FARS files performed for the NPRM also showed other characteristics that were common to high-occupancy buses involved in fatal crashes: 16 or more designated seating positions, and two or more rows of forward-facing seats that were rearward of the driver's seating position (i.e., this feature distinguishes the bus from a bus with perimeter seating).

With this information, we included these criteria in the proposed definition, noting that the 16 or more capacity criterion also was consistent with FMCSA regulations for commercial driver's licenses. We intended the definition to include buses sold for ''intercity, tour, and commuter bus service'' (75 FR at 50970) and listed those types of service in the definition. We proposed to exclude school buses and urban transit buses from the definition, for reasons explained in the NPRM.

[48] Under 571.3, a bus is designed to carry 10 or more passengers. Vehicles designed to carry fewer than 10 passengers are multipurpose passenger vehicles (MPVs) or passenger cars.

[49] Other than transit buses and school buses.

[50] Monocoque means a type of vehicular construction in which the body is combined with the chassis as a single unit.

a. GVWR

Approximately 11 commenters addressed the proposed GVWR criterion of 11,793 kg (26,000 lb) or greater. Some commenters expressed their support for the criteria proposed in the NPRM, including the 11,793 kg (26,000 lb) GVWR cut-off, without providing specific reasons for their agreement. Many commenters believed that the criterion should be lowered to 4,536 kg (10,000 lb) from 11,793 kg (26,000 lb).

NTSB commented in favor of a 4,536 kg (10,000 lb) GVWR criterion, stating that ''all buses with a GVWR above 10,000 pounds should be defined and have standards addressing roof strength, occupant protection, and window glazing.'' NTSB stated that the 11,793 kg (26,000 lb) GVWR criterion in the motorcoach definition will exclude some medium-sized buses from the proposed lap/shoulder seat belt requirements while including other buses that ''are essentially the same.'' The commenter stated that medium-size buses should be categorized as motorcoaches because of the buses' interior design, use for tour operations, and seating capacity.

The National Association of State Directors of Pupil Transportation Services, Safe Ride News, and Advocates for Highway Safety (Advocates) also supported lowering the GVWR criterion to 4,536 kg (10,000 lb). These commenters stated that the proposed definition would exclude buses that serve the same function and are similar in design to buses that transport many passengers on high-speed roads.

Seat suppliers Freedman Seating Company (Freedman) and IMMI supported lowering the criterion to 4,536 kg (10,000 lb). Freedman stated that the definition of motorcoach proposed in the NPRM would leave a class of vehicles with a GVWR between 4,536 kg (10,000 lb) and 11,793 kg (26,000 lb) that would not be required to have seat belts. Seat supplier American Seating suggested a GVWR criterion of 8,618 kg (19,000 lb) or greater in order to include vehicles of similar construction and design intent as ''motorcoaches.''

Bus manufacturers IC Bus and MCI suggested various vehicle attributes and features of a ''traditional motorcoach'' for use in a definition (e.g., 40+ passenger seats, an elevated passenger deck over a baggage compartment, buses engaged in highway speed). These features are typically associated with over-the-road buses. Alternatively, IC Bus suggested that, if NHTSA believes there is a need to ''expand the motorcoach definition beyond what we would consider the traditional motorcoach,'' then IC Bus would support a mandate for seat belts on all forward-facing passenger seats on all buses with a GVWR over 10,000 lb, excluding urban transit buses and school buses. Similarly, MCI stated that the GVWR criterion should be lowered to include buses with a GVWR less than 11,793 kg (26,000 lb) if the vehicles are sold for and/or are engaged in highway speed operations that are the same as or similar to the typical operation as motorcoaches.

United Motorcoach Association (UMA) commented in favor of applying the rulemaking to buses with a GVWR between 4,536 kg and 11,793 kg (10,000 lb and 26,000 lb), stating that these buses are being increasingly used in intercity charter and tour bus applications and have been in accidents.

Agency Response

We begin by separating two entwined subjects addressed in the comments on the proposed definition. First is a matter about which buses should be called ''motorcoaches,'' and the second concerns the vehicles to which this rulemaking ought to apply.

1. Response to Comments on Looking Like A Traditional Motorcoach

As to the first matter, some commenters were troubled that certain buses would be ''motorcoaches'' under the proposed definition when ''motorcoaches'' were traditionally understood by various industry and user groups to be over-the-road buses (characterized by an elevated passenger deck located over a baggage compartment) and not trolley buses (buses configured to look like trolley cars), double-decker buses, buses using body-on-chassis design, entertainment buses, and the like. MCI, IC Bus, and UMA presented their arguments in a manner that appeared to reserve the term ''motorcoach'' for buses that they described as a ''traditional motorcoach,'' i.e., an ''over-the-road'' bus. IC Bus further recommended that ''motorcoach'' be defined as a ''Class 8'' bus, which has a GVWR greater than 33,000 lb.

Several commenters identified physical features [51] of a ''motorcoach'' that they believed would be helpful to use in a motorcoach definition, such as vehicle floor height (low or high height) (e.g., a passenger compartment that is more than 45 inches above the ground); engine location; body/chassis construction (monocoque versus body-on-chassis); 40 or more passenger seats; whether the bus has equipment for standees; center of gravity (CG), the number of entrance/exit doors, the presence of a lavatory, and the presence of three axles. Some of these features were suggested to distinguish motorcoaches from transit buses. Some appeared to be suggested by commenters seeking to avoid having their buses called motorcoaches.

After the NPRM, NHTSA and FMCSA met to determine whether it was necessary to define the term ''motorcoach'' in the final rule given the public comments and the types of buses NHTSA intended to cover under its rulemaking. Although FMCSA does not define the term motorcoach, it uses the term in its programs and many of its constituency groups have long understood the term ''motorcoach'' to mean an over-the-road bus. FMCSA informed NHTSA that defining ''motorcoach'' to mean buses other than over-the-road buses could cause some consternation among user groups (e.g., bus operators and inspectors) who are accustomed to thinking of a motorcoach as an over-the-road bus. For instance, if NHTSA considered all buses with a GVWR greater than 11,793 kg (26,000 lb) ''motorcoaches,'' confusion in the field may arise as to whether FMCSA's in-use requirements for ''motorcoaches'' apply to the vehicles.

Although each agency in DOT is able to define specific terms in their regulations that have legal relevance only in the context of that agency's regulations, NHTSA agrees that confusion should be avoided as reasonably possible over the use of the word ''motorcoach'' by the agencies of DOT.

Thus, after evaluating the above information, we have made the following conclusions.

NHTSA seeks to require passenger lap/shoulder seat belts in high-occupancy buses that, according to accident data, are associated with an unreasonable risk of passenger fatality and injury due to ejection. Accident data indicate that these buses, which we proposed in the NPRM to call ''motorcoaches,'' are buses with a GVWR greater than 11,793 kg (26,000 lb). FARS data did not show that any feature other than GVWR—such as floor height, seating capacity, CG, number of axles or emergency exits, body/chassis construction, or presence of a toilet—

[51] Some commenters also suggested operating speed and where the bus is driven (such as exclusively in urban areas), but these features were not helpful. Since these issues relate to how the vehicle would be used, as discussed earlier, these use-based suggestions are not conducive toward determining the applicability of the FMVSSs during vehicle manufacture.

was relevant in distinguishing these buses from buses that did not pose the increased fatality risk.

As explained previously and in the NPRM, we believe that limiting the scope of this rulemaking only to ''traditional motorcoaches'' (over-the-road buses) would only be a partial, incomplete response to the safety problem. FARS data for 2000–2009 show that buses other than over-the-road coaches were involved in high speed crashes involving multiple passenger fatalities due to rollover, ejection and frontal impacts. FARS data show that 64 percent of the fatalities were in cross-country/intercity buses (traditional over-the-road type buses) and 36 percent were in the ''other bus'' and ''unknown bus'' categories. We do not find good reason to exclude from today's seat belt requirements buses that are of a similar size, seating configuration, and function as an over-the-road bus type, and that are associated with the same safety risk as an over-the-road bus, only because they have a non-traditional (e.g., body-on-chassis) design and appearance.

To illustrate, the IC Bus HC Series is an example of large ''mid-sized'' body-on-chassis bus that approaches the size of a traditional over-the-road motorcoach. This vehicle can be ordered with a GVWR up to 13,608 kg (30,000 lb), an occupant capacity of 37 or 45, and an interior that has many of the same features as a traditional motorcoach. IC Bus advertises this bus on its Web site [52] as suitable for tours, shuttle service, sports team transport, high-frequency trips, ski trips, church group transport, and scheduled route and transit service. The bus is advertised as having luxury features found on traditional motorcoaches, such as an audio-video entertainment system with DVD and AM/FM/CD stereo, overhead parcel rack with aircraft style air conditioning controls, reading light, plush seating, and availability of WiFi, satellite TV, and wide-screen television. In short, this bus can be ordered in a configuration which lends itself to use as a motorcoach with motorcoach features. There is no reason to believe that it poses a lesser ejection crash safety risk than a traditional over-the-road motorcoach. The main difference between this bus and an over-the-road bus is body-on-chassis construction and a dedicated luggage compartment in the rear.[53] There are similarly sized buses from other manufacturers which even offer luggage storage under the passenger deck.[54]

An elevated passenger deck over a baggage compartment was not an element common to the buses involved in fatal crashes. We believe it would be short-sighted for our regulation to refer to an under-compartment storage location for baggage as determinative of the applicability of this regulation since a separate storage location has been irrelevant to distinguishing the buses' involvement in fatal crashes. Also, tour buses are frequently equipped with just an overhead rack for passengers to store personal belongings. Some buses offer the baggage compartment as an option to the purchaser.

We also determined that a self-contained toilet was only prevalent on long distance travel buses and was not present in all tour or commuter buses. Other equipment such as reading lights, video displays, ventilation ports and adjustable seat backs were also not common to all motorcoach type buses. Accordingly, identifying a motorcoach by the presence of these features could exclude many of the buses that have been in fatal crashes over the years. We also wanted to avoid a definition that could be easily circumvented by persons seeking to have their buses excluded from the motorcoach category. Such a definition would be one that specified that a motorcoach is a vehicle with a feature that a manufacturer could readily leave off of the vehicle.

Yet, after reviewing the comments, the information from FMCSA, the Motorcoach Enhanced Safety Act, and other information, we have decided to adopt a different approach to apply the requirements of this final rule than defining ''motorcoach'' as proposed in the NPRM. We have determined it is unnecessary to define the term to accomplish our rulemaking objectives, and that it is simpler not to define the term at all.

In the NPRM, the agency's proposed definition basically sought to apply FMVSS No. 208's passenger lap/shoulder belt requirements to buses with a GVWR greater than 11,793 kg (26,000 lb), excepting certain bus types. After reviewing the comments, we decided that if those excepted bus types were defined (e.g., transit bus, school bus [55]), a preferred approach would be to simply apply FMVSS No. 208's requirements to buses with a GVWR greater than 11,793 kg (26,000 lb) and exclude those excepted bus types.

After passage of the Motorcoach Enhanced Safety Act, it became necessary to modify this approach slightly for buses meeting the Act's over-the-road bus definition. The Act does not place a 11,793 kg (26,000 lb) lower limit on over-the-road buses, and does not permit other than lap/shoulder belts on designated seating positions in those buses. With the Act's provisions in mind, we decided to apply FMVSS No. 208's requirements separately to over-the-road and to non-over-the-road buses. This is the approach adopted by this final rule.

This approach is preferable to the NPRM's approach for several reasons. Some commenters had trouble reconciling the traditional view of a motorcoach with our proposed definition of a motorcoach and were confused or perplexed that a bus they had never considered to be a motorcoach would be a motorcoach under the regulation. We decided that, with people having pre-conceived ideas of what a ''motorcoach'' is or should be, it is best not to use the traditional term to describe a nontraditional universe of buses. This approach accords with plain writing principles.

Some manufacturers objected to having their buses called motorcoaches and having them subject to this rulemaking. In reality, it does not matter for the application of the standard what name we called the vehicles. The term was intended as an abbreviated way to apply the seat belt requirements to the buses that crash data indicate need seat belts, i.e., buses with a GVWR greater than 11,793 kg (26,000 lb). After considering the comments, we decided we did not need to use the term ''motorcoach'' to accomplish our rulemaking objectives, and that it was best to avoid adopting a definition of ''motorcoach'' that differed from a commonly held understanding of the term.

This approach is also more practical than the NPRM's because of enactment of the Motorcoach Enhanced Safety Act, which refers specifically to over-the-road [56] buses without a limitation on GVWR, and calls specifically for lap/shoulder belts at all designated seating positions on these vehicles. To our knowledge, all buses ''characterized by an elevated passenger deck located over a baggage compartment'' currently manufactured in the U.S. have GVWRs

[52] *www.icbus.com/ICBus/buses/commercial/hcseries/features. Last accessed July 10, 2012.*

[53] Similar buses are being offered by several other manufacturers, including Turtle Top, Glaval Bus, Starcraft Bus, Krystal Koach, and Thor Industries and their subsidiaries.

[54] *www.turtletop.com/OdysseyXLT/Options.aspx.*

[55] ''School bus'' is already defined in 49 CFR 571.3.

[56] An over-the-road bus is statutorily defined as ''a bus characterized by an elevated passenger deck located over a baggage compartment.'' See section 3038 of the Transportation Equity Act for the 21st Century (49 U.S.C. 5310 note).

greater than 11,793 kg (26,000 lb). It also does not seem likely that an ''over-the-road'' bus would be produced in the future with a GVWR under 4,536 kg (10,000 lb). However, markets change, and we are aware of buses apparently meeting the ''elevated passenger deck located over a baggage compartment'' description with GVWRs below 11,793 kg (26,000 lb) being sold for use in other countries. Thus, to ensure that all over-the-road buses in the U.S. in the future are equipped with lap/shoulder belts at all designated seating positions, we are adopting the TEA–21 definition of over-the-road bus and explicitly applying today's regulation to that bus type, as well as to buses other than over-the-road buses with GVWRs greater than 11,793 kg (26,000 lb). This approach not only ensures that Congress's intent to enhance the safety of over-the-road buses is realized now and in the future, but better attains our overarching goal under the National Traffic and Motor Vehicle Safety Act of enhancing the safety of intercity buses used for motorcoach transportation.[57]

Thus, we are amending FMVSS No. 208 to require lap/shoulder belts at all seating positions on: (a) Over-the-road buses; and (b) non-over-the-road buses with a GVWR greater than 11,793 kg (26,000 lb) (with the exception of excluded bus types). By extending FMVSS No. 208 to these vehicles, we are also extending associated requirements to the seat belt systems on the vehicles, such as the FMVSS No. 210 anchorage strength requirements. This approach makes the applicability of the amended FMVSS No. 208 requirements very clear. Under today's final rule, if the bus is an over-the-road bus, the seat belt system requirements apply. If the bus is not an over-the-road bus, if its GVWR is greater than 11,793 kg (26,000 lb), the seat belt system requirements apply unless the bus is in an excluded category of bus (transit bus, school bus, perimeter-seating bus, prison bus). This clear-cut approach accords with plain writing principles.

Today's approach is more aligned with NTSB H–10–002 than a situation where the term ''motorcoach'' had different meanings in the NHTSA and FMCSA programs. Today's approach avoids potential confusion among the public that might result from a NHTSA definition of ''motorcoach'' that differed from the understanding of the FMCSA community or from the Motorcoach Enhanced Safety Act.

Accordingly, for the reasons discussed above, this final rule does not adopt a ''motorcoach'' definition. It amends FMVSS No. 208 to apply seat belts and associated requirements at all seating positions and thereby applies the FMVSS No. 210 anchorage strength requirements to over-the-road buses, and to non-over-the-road buses with a GVWR greater than 11,793 kg (26,000 lb) with the exception of certain excluded bus types.

As indicated above, the Motorcoach Enhanced Safety Act also directs the Secretary to consider various other motorcoach rulemakings aside from today's final rule, and directs us to conduct those rulemakings in accordance with the National Traffic and Motor Vehicle Safety Act. We note that in future rulemaking actions targeted at over-the-road buses and other large buses taken pursuant to these statutory authorities, there might be a need for the agency to clarify one or more descriptive parameters in the definition of over-the-road bus, such as the terms ''elevated'' and ''baggage compartment'' in deciding the applicability of the amended rules. Clarification might be needed so as to avoid possible conflict among the Federal motor vehicle safety standards for buses of various types and weights, or to make the applicability of a standard easier to understand.

2. On Lowering the GVWR Criterion

The second matter of concern expressed in the comments was: To which vehicles should this rule apply. Many comments expressed the position that, since the agency is undertaking a rulemaking to install lap/shoulder belts on all seats of large buses, now is the time to require installation of such belts on all buses.[58] It seemed that some commenters wanted the GVWR criterion lowered from 11,793 kg (26,000 lb) to 4,536 kg (10,000 lb), so that when belts are required and other safety efforts are initiated for ''motorcoaches,'' the seat belts and safety improvements would be required for all buses.

This final rule requires all over-the-road buses to have lap/shoulder belts without reference to GVWR, in accordance with the Motorcoach Enhanced Safety Act. For buses other than over-the-road buses, this rule adopts the GVWR criterion of 11,793 kg (26,000 lb)[59] and does not lower it to 4,536 kg (10,000 lb). Our reasons for not lowering the GVWR criterion for buses other than over-the-road buses are discussed below.

This rulemaking originated to focus on the risk of fatality associated with ''motorcoaches,'' which NHTSA's 2007 Motorcoach Safety Plan had called intercity transport buses. This rulemaking was not intended to address whether seat belts should be required on buses regardless of vehicle weight class. This final rule also responds to the Motorcoach Enhanced Safety Act, which requires NHTSA to issue a final rule ''requiring safety belts to be installed in motorcoaches'' within one year after date of enactment of the Act. Congress was aware of the August 2010 NPRM preceding this final rule, and the short timeframe provided by the Act indicates that Congress was aware that NHTSA intended this rulemaking to be focused on heavy buses and that Congress wanted NHTSA to complete it quickly.

The decision to focus this rulemaking on buses with a GVWR greater than 11,793 kg (26,000 lb) is data-driven. In developing this rulemaking, NHTSA analyzed accident data that identified unique safety risks affecting buses that were not sufficiently addressed by the current FMVSSs. These risks include the risks of occupant ejection, prolonged emergency egress from the vehicles, and structural vulnerability to roof loading in a rollover event.

As to which buses posed these risks, we examined accident data from a 10-year period to see which buses were involved in fatal crashes, the type of crashes that caused the harm, and the specific mechanics of the injury-causing event. FARS data showed that most passenger fatalities involved buses with a GVWR of more than 11,793 kg (26,000 lb). This final rule applies the seat belt regulation to these buses associated with that risk.

The decision to focus this rulemaking on buses with a GVWR greater than 11,793 kg (26,000 lb) is based on a sound and focused agency policy. NHTSA established the 2007 ''NHTSA's Approach to Motorcoach Safety'' plan after a comprehensive review of safety issues associated with bus

[57] Furthermore, another practical advantage is this approach enables us to refine the requirements of today's final rule in a clearer manner. We read the Motorcoach Enhancement Safety Act as limiting the final rule's allowance of lap belts on over-the-road buses. We have more discretion for other bus types, and we have used our discretion, as appropriate, to allow lap belts for side-facing seats on non-over-the-road buses, and to exclude certain buses (e.g., prison buses) from requirements for seat belts.

[58] FMVSS No. 208 requires lap/shoulder belts for all seats on buses with a GVWR of 4,536 kg (10,000 lb) or less. It also requires lap belts at the driver seat of buses with a GVWR greater than 4,536 kg (10,000 lb).

[59] This final rule slightly changes the proposed GVWR criterion ''GVWR of 11,793 kg (26,000 lb) or greater'' to ''GVWR greater than 11,793 kg (26,000 lb).'' The change referring to the 1-lb difference was made to make the GVWR cut-off more consistent with the regulations of FMCSA, which use a criterion of ''26,001 lb'' in its definition of ''commercial motor vehicle.'' See 49 CFR 383.5.

transportation and the course of action that the agency could pursue to address them, as well as projects that should be priority actions. Many considerations were factored into determining the priorities, including: cost and duration of testing, development, and analysis required; likelihood that the effort would lead to the desired and successful conclusion; target population and possible benefits that might be realized; and anticipated cost of implementing the ensuing requirements into the motorcoach fleet. The agency has focused today's rulemaking on the subject buses (GVWR above 11,793 kg (26,000 lb)) to achieve the specific goals of NHTSA's 2007 plan efficiently and expeditiously.

Expanding this rulemaking into a major undertaking on seat belts on all buses would delay issuance of this final rule and the benefits attained, which would not accord with the Motorcoach Enhanced Safety Act. We believe that a belt requirement for buses with a GVWR of 4,536 kg to 11,793 kg (10,000 lb to 26,000 lb) is an important issue, our understanding of which would benefit from a fuller discussion of related issues. We would like to consider more fully matters related to the current and future use of the buses, belt use, any technical issues, and the benefits and costs of a belt requirement. Also, as the majority of manufacturers of ''mid-size buses'' (between 10,000 and 26,000 lb GVWR) are small businesses, a separate action on mid-size buses might result in many small businesses commenting on the initiative, with NHTSA gaining more information from participation of these entities in the rulemaking process.

In support of its argument that the GVWR criterion should be lowered to include buses with a GVWR greater than 4,536 kg (10,000 lb), NTSB provided data from the crashes of two body-on-chassis buses (both with a GVWR between 4,536 kg and 11,793 kg (10,000 lb to 26,000 lb) as evidence of a safety need to lower the GVWR weight limit to 4,536 kg (10,000 lb). These crashes resulted in a total of 10 fatalities in 2009 and 2010. As discussed above, the information from NTSB prompted NHTSA to perform a revised data review, to include data from the ''other bus'' and ''unknown bus'' FARS bus categories, both at the 4,536 kg to 11,793 kg (10,000 lb to 26,000 lb) and over 11,793 kg (26,000 lb) GVWR levels.[60] The updated data from the three FARS bus categories continue to show that buses with a GVWR between 4,536 kg and 11,793 kg (10,000 lb to 26,000 lb) do not constitute a large part of the overall safety problem that we were addressing in the ''NHTSA's Approach to Motorcoach Safety Plan.'' (In this discussion, when we refer to the FARS data for buses, we are excluding transit bus and school bus body types, for the reasons discussed in the NPRM.)

As discussed in the earlier section of this preamble, ''Updated FARS Data,'' the new analysis showed that from 2000 through 2009, there were 251 occupant fatalities in buses with a GVWR greater than 4,536 kg (10,000 lb). Only 42 (17 percent) of these occupant fatalities occurred in buses with a GVWR between 4,536 kg and 11,793 kg (10,000 lb to 26,000 lb). In contrast, 209 (83 percent) occupant fatalities were in buses with a GVWR greater than 11,793 kg (26,000 lb). Among the 137 fatalities occurring in rollover crashes in buses with a GVWR greater than 4,536 kg (10,000 lb), 114 (83 percent) were in buses with a GVWR greater than 11,793 kg (26,000 lb).[61]

NHTSA has examined the benefits and costs of our final rule in accordance with the principles for regulatory decision-making set forth in Executive Orders (E.O.) 12866 and 13563, and has made decisions consistent with those orders. Fatalities and injuries in transit buses and in mid-size buses (between 10,000 and 26,000 lb GVWR) were also examined by NHTSA after receiving the comments, to obtain a higher-level view of the occupant protection provided by buses generally. The FRIA provides these analyses for informational purposes.[62] Although it appears that the likely cost per equivalent life saved for mid-size buses will be much greater than the $6.3 million value of a statistical life guideline in ($2008) at least for the present and near future, we would like to continue to examine the need for seat belts on these buses in a future context that will allow more time to conduct this examination than that provided by the Motorcoach Enhanced Safety Act for this final rule.

Accordingly, as we have shown in this section, in developing this final rule, we are applying this rule to high-occupancy buses that have a high involvement in fatal crashes, generally, and in fatal rollover crashes involving ejection, particularly—i.e., buses with a GVWR greater than 11,793 kg (26,000 lb). In doing so, we are mitigating the vast majority of fatalities Congress intended to address in the Motorcoach Enhanced Safety Act, and which NHTSA has targeted in the 2007 ''NHTSA's Approach to Motorcoach Safety'' plan, in a focused and expedited manner.[63]

b. Sixteen Designated Seating Positions

The proposed ''motorcoach'' definition included a provision that one of the attributes of a motorcoach is that it has 16 or more DSPs. This reference was to make the definition similar to FMCSA's definition of a ''commercial motor vehicle,'' for purposes of FMCSA's commercial driver's license (CDL) requirements.

Comments

Some commenters (e.g., Freedman Seating Company, and MCI) recommended that the number of DSPs be reduced to fewer than 16. Freedman and MCI's comments were related to their suggestion that the rule should be applied to smaller buses. Turtle Top's comment highlighted the increased complexity and possible confusion that a ''16 or more DSPs'' provision could create in specifying vehicle types.

Agency Response

Under FMCSA's regulations, buses with a GVWR greater than 11,739 kg (26,000 lb) are commercial motor vehicles under the CDL regulation,

[60] See the previous discussion of this issue in the section titled, ''Updated FARS Data.'' For the NPRM, only data from the ''cross-country/intercity'' FARS bus category were analyzed, as NHTSA had thought that this cross-country/intercity FARS bus category contained the relevant data.

[61] Notwithstanding the agency's determinations about limiting the GVWR limit for non-over-the-road buses, this final rule also responds to the Motorcoach Enhanced Safety Act. That Act requires lap/shoulder belts on over-the-road buses and provides no explicit limit on GVWR. As mentioned earlier, we are not aware of any over-the-road bus being sold in the U.S. with a GVWR below 11,793 kg (26,000 lb). Thus, as a practical matter, the buses affected by this final rule are buses with a GVWR greater than 11,793 kg (26,000 lb).

[62] For the FRIA analysis, we estimate that there are approximately 14,600 mid-size buses (between 10,000 and 26,000 lb GVWR) produced and sold annually for purposes other than school transportation and transit services. We assume for purposes of our analysis that the average mid-size bus has 24 passenger seats. The average per vehicle costs are estimated at $7.54 for the driver position and $937.68 for the passenger positions. The total fleet cost to install lap/shoulder belts on these vehicles is estimated to be $13.8 million and the additional fuel costs would be approximately $6.9 to $9.4 million. We estimate that 0.02 to 0.2 driver lives (1 to 12 injuries) and 0.3 to 1.71 passenger lives (28 to 153 injuries) would be saved annually (0.67 to 4.96 total equivalent lives) by a seat belt requirement applying to mid-size buses, assuming the effectiveness of belts on mid-size buses is equal to that we estimate for belts on buses with a GVWR greater than 11,793 kg (26,000 lb). The cost per equivalent life saved is estimated to range between $0.3 to $1.2 million for drivers, $4.6 to $35.5 million for passengers and $4.2 to $33.7 for all occupants (assuming a seat belt use rate of 50 percent to 83 percent for drivers and 15 percent to 83 percent for passengers).

[63] This final rule does not prohibit the voluntary installation of passenger seat belts in buses with a GVWR between 4,536 kg and 11,793 kg (10,000 lb to 26,000 lb).

regardless of the number of DSPs.[64] Since this final rule does not lower the GVWR criterion, the number of DSPs on a bus with a GVWR greater than 11,793 kg (26,000 lb) is of no consequence for purposes of CDL requirements. Thus, the comments are moot, and the ''16 or more DSPs'' provision is unnecessary and may only add confusion regarding the requirements for buses with a GVWR greater than 11,793 kg (26,000 lb), especially those with only 10 to 15 DSPs. We have deleted the provision.

c. At Least 2 Rows of Forward-Facing Seats Rearward of the Driver's Seat

The proposed ''motorcoach'' definition included a provision that one of the attributes of a motorcoach is that it has ''at least 2 rows of passenger seats, rearward of the driver's seat, that are forward-facing or can convert to forward-facing without the use of tools.'' This reference was to distinguish ''motorcoaches'' from buses with perimeter seating, such as those used to transport passengers in airports between the terminal and locations such as a rental car facility or long term parking.

Buses with perimeter seating usually have a single forward-facing row of seats at the back of the vehicle and seats along one or both sides of the bus. Passengers sitting along the side of the bus face the longitudinal centerline of the vehicle, usually with their backs toward the windows. Buses with perimeter seating are used to carry people for a relatively short period, typically are meant to transport standees, and are spacious to accommodate baggage and other carry-on items and to maximize the speed of passenger boarding and alighting. Passengers are expected to board and disembark the bus quickly, with large baggage and other belongings; the buses are on a tight operating schedule. We proposed to exclude buses with perimeter seating because we believed that they are used for relatively short rides, and are used on set routes and are not widely exposed to general traffic. Also, because of the nature of the transport (frequent and quick loading and unloading of passengers), and the roads on which they generally travel, passenger seat belts in such buses are not as needed or likely to be worn by passengers.

Comments

Advocates suggested that passenger-carrying commercial motor vehicles should not be excluded from the ''motorcoach'' definition simply on the basis of ''the arrangement of designated, forward-facing seating positions.'' Other commenters supported placing seat belts on airport shuttles.

MCI commented changing the criterion from ''at least two rows of passenger seats'' to ''at least 8 seating positions.''

Turtle Top thought the motorcoach definition proposed in the NPRM implied that motorcoaches can have 16 DSPs with only two rows of seats, requirements it thought were conflictive. IC Bus, American Seating, and IMMI commented that all seats in motorcoaches should be required to be forward-facing.

Agency Response

The Motorcoach Enhanced Safety Act directs NHTSA to ''prescribe regulations requiring safety belts to be installed in motorcoaches at each designed seating position.'' ''Safety belts'' mean lap/shoulder belts (see section 32702(12) of the Act) and ''motorcoach'' means ''over-the-road bus'' (a bus characterized by an elevated passenger deck located over a baggage compartment) but does not include a bus used in public transportation provided by, or on behalf of, a public transportation agency, or a school bus (see section 32702(6) of the Act). In response to the Motorcoach Enhanced Safety Act, this final rule requires lap/shoulder belts at each designated seating position in over-the-road buses, even if the bus has perimeter seating.[65]

For buses other than over-the-road buses (typically body-on-frame construction), we have decided to exclude buses with perimeter seating for the reasons discussed in the NPRM and summarized above. However, we are simplifying the language of the standard since the proposed language describing a bus of this type was not well understood or clear enough.

We wish to note, before beginning our discussion, that we received a comment from the family of a man who was permanently disabled in a crash of an airport shuttle bus with perimeter seating. The comment supported having belts on these buses. We have carefully considered the comment but we are unable to concur with its recommendation to require seat belts on these buses.[66] In our decision-making on safety regulations, our decisions must be practical, fair, reasonable and necessary. The available accident data indicate that fatalities and serious injuries in crashes of airport shuttle-type buses of GVWRs greater than 11,793 kg (26,000 lb) with perimeter seating do not happen with a frequency that enables us to conclude that the affected buses with perimeter seating should be required to have seat belts. However, in the future, if data indicate a need for seat belts, we will be willing to revisit this issue.

Simplified Language

The following discussion relates to buses other than over-the-road buses. It does not apply to over-the-road buses. The Motorcoach Enhanced Safety Act requires over-the-road buses to have safety belts, so we have therefore defined ''perimeter-seating bus'' as not including an over-the-road bus.

The proposed regulatory text that sought to exclude airport shuttle-type buses with perimeter seating was not well understood by commenters. To clarify it, we are simplifying the language describing perimeter-seating buses in two ways. First, we are changing the format of the regulatory text. As noted above, the NPRM attempted to specify what a motorcoach has or does not have (as proposed in the NPRM, a motorcoach had to have at least 2 rows of forward-facing passenger seats—i.e., a bus with fewer than 2 rows of forward-facing seats was a perimeter-

[64] Pursuant to the Federal Motor Carrier Safety Administration's Commercial Driver's License Standards at 49 CFR 383.3, persons are required to obtain and hold a CDL if they operate in interstate, foreign or intrastate commerce if they operate a vehicle that meets any of the classifications of a ''commercial motor vehicle'' (CMV) where CMV is defined at 49 CFR 383.5 as follows:

''*Commercial motor vehicle (CMV)* means a motor vehicle or combination of motor vehicles used in commerce to transport passengers or property if the motor vehicle—

(1) Has a gross combination weight rating or gross combination weight of 11,794 kilograms or more (26,001 pounds or more), whichever is greater, inclusive of a towed unit(s) with a gross vehicle weight rating or gross vehicle weight of more than 4,536 kilograms (10,000 pounds), whichever is greater; or

(2) Has a gross vehicle weight rating or gross vehicle weight of 11,794 or more kilograms (26,001 pounds or more), whichever is greater; or

(3) Is designed to transport 16 or more passengers, including the driver; or

(4) Is of any size and is used in the transportation of *hazardous materials* as defined in this section.''

[65] The Motorcoach Enhanced Safety Act's mandate to require seat belts to be installed in over-the-road buses at each designated seating position applies to niche vehicles, such as a vehicles often referred to as a ''limo bus'' or ''party bus,'' to the extent that the ''limo buses'' are based on an ''over-the-road'' bus design. Another type of niche vehicle is the touring/entertainment bus that is a modified over-the-road bus, with eating and sleeping accommodations, used by some celebrities and entertainers when touring the country. Additional comments and discussion related to these two niche bus types can be found in section VIII.d.3. To the extent that these niche vehicles are body-on-frame construction (not over-the-road buses) they could qualify to be exempted as perimeter-seating buses. Also, some of these vehicles may not be buses at all if they have less than 10 passenger DSPs (11 total DSPs, including the driver).

[66] This discussion assumes that the bus is not an over-the-road bus.

seating bus and not a ''motorcoach''). We have decided it is easier to define ''perimeter-seating bus,'' and then exclude perimeter-seating buses from FMVSS No. 208's seat belt requirements.

Second, we have defined a perimeter-seating bus by referring to the maximum number of forward-facing DSPs the vehicle may have, rather than the number of ''rows'' the vehicle may have. This is along the lines suggested by MCI. We are making this change because we have found it difficult to define the term ''row'' for purposes of today's amendments using plain language.

FMVSS No. 226, ''Ejection mitigation'' (49 CFR 571.226) has a definition of row, but that definition does not work entirely well with regard to motorcoach seating configurations.[67] For example, assuming the forward-facing seating positions in a bus is divided by an aisle, the forward-facing seating positions on the left half of the bus may not align with the seats on the right half. This lack of alignment may occur when there is a parcel rack, junction box, door, or some other element of the bus' design that is located on only one side of the bus. These elements may shift placement of seats on that side of the bus, so that the seats do not align with seats on the other side (when viewed from the side of the bus, as specified by FMVSS No. 226).

After reviewing the comments, we have decided that an easier approach is to define ''perimeter-seating bus'' by referring to a maximum number of forward-facing passenger DSPs allowed under the exclusion. Under the NPRM, a bus that has two or more rows of forward-facing passenger seats is potentially a ''motorcoach.'' Since there are typically 4 forward-facing passenger DSPs in a row on a motorcoach, there are 8 forward-facing DSPs in two rows. Thus, the equivalent of saying that a motorcoach has at least 2 rows of forward-facing seats is to say that a motorcoach has at least 8 forward-facing DSPs.

In other words, to be excluded from the affected class as a perimeter-seating bus, the bus has to have 7 or fewer forward-facing passenger DSPs.[68] This final rule adopts the following term in FMVSS No. 208 to describe a perimeter-seating bus: A ''perimeter-seating bus'' is a bus that has 7 or fewer designated seating positions rearward of the driver's seating position that are forward-facing or can convert to forward-facing without the use of tools.

The maximum number of forward-facing DSPs that can fit side-by side in a vehicle 2.6 meters (102.36 inches)[69] wide is 5. This is calculated assuming a minimum DSP width of 450 millimeters (17.7 inches, as specified at 49 CFR 571.3). Thus, a ''perimeter-seating bus'' can have a forward-facing row along the rear wall (5 DSPs) and up to 2 other forward-facing seats behind the driver. Another example is a bus that has some side-facing seats and 3 pairs of seats forward-facing. Under today's rule, as long as the number of forward-facing passenger DSPs is 7 or fewer, the vehicle is a perimeter-seating bus and is excluded from the requirements of this rule.

We recognize that this approach allows a manufacturer to install up to 7 individual forward-facing seats (not including the driver's seat) scattered throughout a bus, and does not require that there be a single row of 5 forward-facing DSPs along the back of the bus. Nonetheless, in limiting the number of forward-facing DSPs to 7 for the bus to be considered a perimeter-seating bus, we believe the definition is clearer and easier to understand than one referring to rows, and adequately describes a bus with primarily side-facing (perimeter) seats.[70]

d. Treatment of Various Bus Types and Configurations Under the Final Rule

We stated in the NPRM that we intended the motorcoach definition to include buses that are sold for intercity, tour, and commuter bus service (75 FR at 50970). In an effort to be as clear and straightforward as possible that buses sold for intercity, tour, and commuter bus service would be motorcoaches, the proposed regulatory text for the motorcoach definition included the following statement: ''*Motorcoach* includes buses sold for intercity, tour, and commuter bus service. . . .'' We did not exclude shuttle buses generally, but requested comment on whether shuttle buses should be excluded from the proposed definition.

1. Shuttle Buses

We received varied comments on whether ''shuttle buses'' should be motorcoaches.

Safe Ride News, Advocates, the National Association of State Directors of Pupil Transportation Services and some individuals supported requiring ''shuttle buses'' to have seat belts. They believed that these vehicles are often in continuous service and can travel on high speed roads, and can match the risk exposure to ejection risk of intercity or over-the-road buses.

Agency Response

The following discussion relates to buses other than over-the-road buses. It does not apply to over-the-road buses. The Motorcoach Enhanced Safety Act requires over-the-road buses to have lap/shoulder belts.

We have decided that there will not be a general exclusion of ''shuttle buses'' from the coverage of this final rule. Comments and agency observations indicate that there is not a clear meaning of the term ''shuttle bus.'' We agree with the United Motorcoach Association that ''shuttle bus'' covers a potentially broad range of uses and bus types. The term can apply to a myriad of commercial passenger vehicles in diverse road and highway exposures. An internet search for buses and services associated with ''shuttle buses'' resulted in vehicles that range from vans to over-the-road buses, transporting passengers over distances of less than a mile to over 100 miles.

Further, FARS data (2000–2009) indicated that for buses with a GVWR greater than 11,793 kg (26,000 lb) and having bus body types other than the excluded categories of transit and school bus, shuttle bus use constituted 22.5 percent of fatalities. Accordingly, we are not excluding shuttle buses from today's final rule.

[67] We have defined ''row'' in Federal Motor Vehicle Safety Standard (FMVSS) No. 226, ''Ejection mitigation.'' (See 49 CFR Section 571.226. ''Row'' means ''a set of one or more seats whose seat outlines do not overlap with the seat outline of any other seats, when all seats are adjusted to their rearmost normal riding or driving position, when viewed from the side.'') That standard's definition of row is not suited to our goals for today's rulemaking. The reason is that ''row'' in FMVSS No. 226 is defined so that any seats that overlap when viewed from the side are considered to be in a single row, i.e., a row does not end until there is a clear separation between seats. This has the effect of minimizing the number of rows in a vehicle, which works well for FMVSS No. 226 because it maximizes the window area required to be covered with an ejection mitigation countermeasure. However, for motorcoaches, if the seats are configured so that when viewed from the side, there is no separation between any seats, the entire seating of the bus would be considered one row. Thus, the bus would not be considered to have two rows of forward-facing seats, and therefore, contrary to the goal of this rulemaking, would not be a ''motorcoach.''

[68] The NPRM did not intend to count the driver's seat in consideration of what is a row. Likewise, we conclude that the driver's seat does not count toward the 7 forward-facing DSPs.

[69] According to the Federal Highway Administration's regulations at 23 CFR 658.15, the maximum width limit for commercial motor vehicles (CMVs) operating on the National Network (NN) is 102 inches, or its approximate metric equivalent of 2.6 meters (102.36 inches), except for Hawaii where it is 2.74 meters (108 inches).

[70] Some commenters thought that the provision in the proposed definition referring to ''at least two rows of forward-facing seats'' was an attempt to require all seats to be forward-facing. We did not intend to propose such a requirement, nor are we aware of safety data showing a need for such a requirement.

Freedman suggested that ''shuttle bus'' should be defined as it is in FMVSS No. 225 (49 CFR 571.225),'' Child restraint anchorage systems: ''a bus with only one row of forward-facing seating positions rearward of the driver's seat.'' We note the FMVSS No. 225 definition of ''shuttle bus'' describes a bus that is classified as a ''perimeter-seating bus'' in today's final rule (see above section).

2. Trolley and Double-Decker Sightseeing Buses

The NPRM's proposed regulatory text for the motorcoach definition stated that ''motorcoaches'' included ''buses sold for . . . tour . . . bus service. . . .''

Comments

Coach USA commented that sightseeing buses called ''trolleys'' (which are buses designed to look like a trolley car on tires) and ''double-deckers'' (buses with two levels of passenger seating, one above the other, some with the top level open and some with both levels enclosed) operate similarly to transit buses and should be excluded from the definition of ''motorcoach.'' The commenter stated that ''[t]hese buses do not operate with passengers on highways, but rather the buses transport passengers exclusively on urban streets, do not exceed about 25 mph, and make frequent stops . . .'' Both Coach USA and the American Bus Association (ABA) suggested that the motorcoach definition exclude buses ''sold for urban sightseeing transportation with frequent stops.'' ABA also recommended that low-floor buses that are used exclusively within urban areas, such as what the commenter said were intra-city double-decker sightseeing buses, be excluded from the motorcoach definition for the same reasons expressed by Coach USA.

Agency Response

We have decided against excluding trolley-type buses and both open and closed top double-decker sightseeing buses from the application of today's final rule.

Regarding trolley-type buses (trolley buses), the agency is concerned that the vehicles are manufactured as buses and are fully capable of being operated at highway speeds. Trolley buses also have overly-large window openings and can be and are at times operated with the windows open, which exacerbates the ejection risk. Seat belts for the passengers will meet a safety need.[71]

Regarding closed top double-decker sightseeing buses, no feature of the vehicle would prevent these buses from being operated in the same manner as double-decker buses operated on the highways, such as those operated by Megabus between major metropolitan areas of the Northeast corridor. Further, Van Hool's distributor advertises Van Hool double-decker buses for intercity bus service.[72] The vehicles can and are being used just like an over-the-road bus for intercity and tour services. (We note that, if a vehicle meets the definition of an over-the-road bus, i.e., if there is a baggage compartment under the elevated passenger deck, the bus must have lap/shoulder belts under the Motorcoach Enhanced Safety Act.)

Regarding open-top double-decker buses, the vehicles are manufactured as buses and are fully capable of operating at highway speeds. We have observed these buses on high-speed freeways, with passengers, as they make their way into Washington, DC. We note that passengers on the top deck of an open-top double-decker bus face unique risks compared to other buses. A collision at a relatively low speed or an unexpected maneuver may expose passengers to an ejection risk. There is even a risk of injury simply to stand up while the vehicle is in operation.[73] (We note again that, if a vehicle meets the definition of an over-the-road bus, i.e., if there is a baggage compartment under the elevated passenger deck, the bus must have lap/shoulder belts under the Motorcoach Enhanced Safety Act.)

Excluding ''sightseeing buses'' would not be reasonable. ''Sight-seeing buses'' generally are not distinguishable from over-the-road and heavy body-on-frame buses. They are manufactured as buses and are capable of and are used on high speed roads. The sights to which they travel may be far distances apart. Travelers are often riding on a particular bus for lengthy tours and may ride the bus over long distances over highways. The buses may pose unique ejection risks if they also have overly-large window openings. Seat belts for the passengers will meet a safety need. (If the bus meets the definition of an over-the-road bus, i.e., if there is a baggage compartment under the elevated passenger deck, the bus must have lap/shoulder belts under the Motorcoach Enhanced Safety Act.)

3. Limousine and Entertainment Buses, Buses With Multiple Wheelchair Positions

Turtle Top described three bus configurations (GVWR greater than 11,793 kg (26,000 lb)) that may be ordered with fewer than 16 DSPs and asked whether they would be covered under the then-proposed motorcoach definition. Two of these bus configurations are the limousine and touring coach. Our answer is the limousine and touring/entertainment coaches are subject to today's seat belt requirements if they are over-the-road buses, regardless of seating capacity and regardless of GVWR, under the Motorcoach Enhanced Safety Act. If the buses are not over-the-road buses, they are subject to the final rule if they have a GVWR greater than 11,793 kg (26,000 lb), and have 8 or more forward-facing DSPs rearward of the driver's position. We assume that the vehicles meet the definition of a ''bus,'' which is defined in the Motorcoach Enhanced Safety Act and our regulations as ''a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.'' (See section 32702(2) of the Motorcoach Enhanced Safety Act and 49 CFR 571.3.)

The third bus configuration Turtle Top asked about is ''a coach that has many wheelchair positions and not many seats.'' The coach is subject to today's seat belt requirements if it is an over-the-road bus, regardless of seating capacity and regardless of GVWR, under the Motorcoach Enhanced Safety Act. The designated seating positions on the bus (not the wheel chair positions) must have lap/shoulder belts.

If the bus is not an over-the-road bus, the following discussion applies. NHTSA has interpreted the DSP definition such that wheelchair seating positions are not DSPs and thus are not required to comply with Federal motor vehicle safety standards that apply to DSPs, such as the requirement in this final rule to have seat belts. However, we have said that wheelchair positions are counted in determining vehicle seating capacity for the determination of the type classification of a vehicle.[74] Accordingly, a vehicle would be subject to today's seat belt requirements if it has a GVWR greater than 11,793 kg (26,000 lb), 8 or more forward-facing DSPs or wheelchair positions rearward of the driver's position, and at least 10 passenger DSPs or wheelchair positions total.[75]

[71] We assume that the trolley buses at issue are not transit buses. Transit buses are excluded from coverage of today's final rule.

[72] See, *http://www.abc-companies.com/models/TD925.asp.* Last accessed July 12, 2012.

[73] On July 11, 2008, two passengers of an open-top double-decker bus were killed when they stood as the bus went under an overpass on an interstate highway in Washington, DC. A similar incident occurred on May 30, 2009 near Mattoon, IL, which also killed two passengers.

[74] *http://isearch.nhtsa.gov/gm/78/nht78-3.31.html.*

[75] We assume the bus is not a school bus. There are different provisions for school buses (see, the

4. Military Ambulances

Blue Bird described a military ambulance bus that it provides to the General Services Administration (GSA) that is equipped with seats that fold down to allow transport of litters for the wounded. Blue Bird asked that the agency exclude this type of bus from the motorcoach definition and thus from the lap/shoulder seat belt requirements for passenger seats.

In response, 49 CFR 571.7(c) specifies that, ''No standard applies to a vehicle or item of equipment manufactured for, and sold directly to, the Armed Forces of the United States in conformity with contractual specifications.'' It is not clear, but it is possible that the sale Blue Bird describes is covered under 571.7(c). If the sale is not covered by 571.7(c) and if the bus is an over-the-road bus, it is required to have seat belts. If the ambulance bus is not an over-the-road bus, if the ambulance bus has 7 or fewer forward-facing DSPs rearward of the driver's position, it is excluded from the requirements of this final rule.

5. Prison Buses

MCI, Blue Bird and Turtle Top asked that vehicles designed to transport prisoners be excluded from the formerly-proposed ''motorcoach'' definition. The commenters stated that these vehicles are often equipped with small porthole style windows or metal screens over existing windows, segregation cells, and fiberglass or stainless steel low-back seats or benches (to optimize supervision and observation) that are specially designed to be impervious to human fluids and to have no crevices. The interior of the bus is designed to provide an enhanced view of detainees by law enforcement officers and to be free of loose articles that can be used as weapons and tools, such as a seat belt assembly. Commenters stated that since the detainees are often in restraints, the use of seat belts is impractical in most cases. They noted that for reasons related to the unique needs and purposes of prison buses, prison buses are currently excluded from emergency exit and other requirements of FMVSS No. 217, ''Bus emergency exits and window retention and release.''

Agency Response

The agency agrees with MCI, Blue Bird, and Turtle Top that passenger seats on buses designed for the transport of passengers under physical restraint should be excluded from the amended FMVSS No. 208 requirements adopted today. The necessary features of the bus—fiberglass or stainless steel low-back seats or benches—are incompatible with installation of seat-mounted lap/shoulder belts. Further, according to the commenters, lap/shoulder belt equipment pose hazards as the buckle hardware and belt webbing could cause harm as weapons or tools. In addition, it is unlikely that the prisoners will be able to buckle themselves in, as their hands are usually handcuffed.

Accordingly, this final rule excludes buses other than over-the-road buses from the requirement to provide passenger seat belts on a ''prison bus'' for the reasons above. This final rule defines ''prison bus'' as follows: ''Prison bus'' means a bus manufactured for the purpose of transporting persons subject to involuntary restraint or confinement and has design features consistent with that purpose. This definition is based on a definition used in FMVSS No. 217. However, because these practical reasons do not apply to the driver's seating position, the driver's seating position is required to have lap/shoulder belts as proposed in the NPRM. For the same reason, any passenger seat opposite (not rearward of) the driver's seat is also required to have a lap/shoulder belt since that seat is not usually used by a prisoner.

For over-the-road buses, the Motorcoach Enhanced Safety Act requires over-the-road buses to have safety belts at each designated seating position. The driver's seating position must be equipped with a lap/shoulder belt. With regard to the passenger seats, we agree that the seats and safety belts could pose sufficient risk to the safety of guards and detainees that compliance with the final rule for passenger seating positions could result in an overall reduced level of safety compared to prison buses without the belts. Prison bus purchasers seeking to avoid installation of passenger safety belts due to concerns about the guards' safety should consider buses other than over-the-road buses. If an over-the-road bus is a necessity, the bus manufacturer could apply for an exemption from the requirements of this final rule under 49 CFR Part 555, presenting information that the applicant is unable to sell a bus whose overall level of safety is at least equal to that of a non-exempted vehicle.[76]

e. Transit Buses

In the NPRM, based on an analysis of FARS data, we proposed that ''motorcoach'' would not include ''an urban transit bus sold for operation as a common carrier in urban transportation along a fixed route with frequent stops.'' Our analysis of FARS data showed that, for buses with a GVWR greater than 11,793 kg (26,000 lb), the bus body type with the fewest fatalities at 8.2 percent was ''transit buses.'' We tentatively determined that, due to a lack of a safety need, it was warranted to exclude transit buses from the class of affected vehicles (motorcoaches) to which the lap/shoulder seat belt requirements would apply.

Comments

In general, most of the bus and seat manufacturers commented that the definition needs to better distinguish between the affected vehicles and ''transit buses.'' In general, the public transit agencies described three types of operations that cover most of the major services they provide.[77] These were: (a) ''Urban transit'' service, characterized by fixed route operation with frequent stops; (b) ''express'' service, characterized by fixed route operation that is similar to, but with less frequent stops than traditional urban transit service, and with potentially short portions of the route on the highway; and, (c) ''commuter express'' or ''premium express'' service, characterized by longer routes with a significant portion on the highway, with either single or frequent stops at each end of the route, and no or few intermediate stops.

The American Public Transportation Association (APTA) expressed its concern that the proposed ''motorcoach'' definition may confuse public transportation agencies, bus manufacturers, and the riding public. APTA explained that the term ''urban'' in the proposed definition would not exclude all buses used in fixed route transit service with frequent stops, ''fixed route'' would not exclude transit buses that are used for route-deviated services with frequent stops (i.e., service that conforms to riders' requests,

DSP definition in 49 CFR 571.3, and FMVSS No. 222).

[76] 49 CFR 555.6(d). The number of exempted vehicles sold in the U.S. in any 12-month period is limited to 2,500 vehicles, 49 CFR 555.6(d)(4). The exemption is limited to a period of 2 years by 49 CFR 555.8(b) but applications for renewal of the exemption are automatically granted if filed within 60 days before termination of the exemption and do not terminate until the Administrator grants or denies the application for renewal. 49 CFR 555.8(e).

[77] The public transit agencies also asked use-related questions, such as whether passengers would be required to wear their seat belts, how would standing passengers (standees) benefit from seat belts, and whether standees would be permitted. Since this final rule does not require belts for transit buses, and because the NPRM did not broach these issues at all, NHTSA sees no need to discuss these issues in this final rule.

although still operating with frequent stops), and ''frequent stops'' may be interpreted to exclude express service (i.e., urban transit service with less frequent stops, although still operated on city streets). APTA suggested that the transit bus exclusion in the proposed definition be replaced with the following: ''. . . [except] a transit bus designed and procured for operation in public transportation other than an over-the-road-bus as defined by the U.S. Department of Transportation.''

Turtle Top was concerned that the term ''urban transit bus'' is not defined in the FMVSSs, and was concerned that a given bus could have both over-the-road and urban transit applications.

IC Bus stated that ''to properly exclude 'urban transit bus' from proposed motorcoach bus definition, it is our opinion that it may not be possible to define a 'motorcoach' without including the vehicle's intended use, or vocation.'' IC Bus followed this statement by presenting to the agency an option to define motorcoach based solely on vehicle attributes and features. The features IC Bus presented were essentially those of an over-the-road bus. The American Bus Association (ABA) suggested NHTSA refer to the ''low-floor'' feature of urban transit buses in defining the buses, but did not define ''low floor.'' Gillig, a transit bus manufacturer, and most of the public transit agencies that commented, recommended that buses sold for or used to provide public transportation services, regardless of configuration, be excluded from the ''motorcoach'' definition. Gillig suggested that we adopt the Environmental Protection Agency's (EPA) definition of ''urban bus'' in 40 CFR 86.091–02.

Agency Response

This final rule excludes transit buses from today's lap/shoulder seat belt requirements because fatality data for urban transit buses differ significantly from that of other buses with a GVWR greater than 11,793 kg (26,000 lb). We believe this difference is due in part to the stop-and-go manner of transit bus operation. Updated FARS data from 2000–2009 continue to show that for all bus body types with a GVWR greater than 11,793 kg (26,000 lb), transit buses have the fewest fatalities at 8.2 percent or 23 out of a total of 281. These same data show that there were 20 fatal crashes involving occupants of urban transit buses, resulting in fatalities of 11 drivers and 12 were passengers. Thus, fatal transit bus crashes involve about one fatality, on average. In summary, there are many fewer total fatalities and fatalities per crash for transit buses, and thus a significantly lower risk than in the buses covered by this final rule.

We have not found a safety need justifying a lap/shoulder seat belt requirement for transit buses. To the extent commenters believe there is a safety need, this issue was not explored sufficiently in the NPRM. We discuss the issue of seat belt requirements for the driver seat of transit buses in section XIV of this notice.

Many commenters were troubled that the proposed definition was not sufficiently clear in distinguishing ''transit buses'' from the buses that do need lap/shoulder seat belts. We agree and have adjusted the proposed definition as follows:

- We made the regulatory text clearer in describing a ''transit bus'' by referring to a structural feature (a stop-request system) that buses must have to be a ''transit bus.'' A ''stop-request system'' means a vehicle-integrated system for passenger use to signal to a vehicle operator that a stop is requested.
- We expanded the description of a transit bus by recognizing that a transit bus could be sold for public transportation provided not only by, but also *on behalf of,* a State or local government, for example, by a contractor.
- We made clearer that over-the-road buses do not qualify as ''transit buses,'' even if the over-the-road bus has a stop-request system or is sold for public transportation provided by or on behalf of a State or local government.[78]

This final rule adopts the following definition of ''transit bus'' and associated terms.

''Transit bus'' means a bus sold for public transportation provided by, or on behalf of a State or local government, that is equipped with a stop-request system and that is not an over-the-road bus. ''Stop-request system'' means a vehicle-integrated system for passenger use to signal to a vehicle operator that they are requesting a stop. ''Over-the-road bus'' means a bus characterized by an elevated passenger deck located over a baggage compartment.

IC Bus suggested that we define motorcoach based solely on vehicle attributes and features. We support the idea of using vehicle attributes and features but the features IC Bus presented were essentially those of an over-the-road bus. We will not adopt an approach that narrowly limits the applicability of this final rule to over-the-road buses. In fact, as discussed below, our intent has been to make sure that over-the-road buses used for transit service do not get excluded from this rulemaking. We have not adopted the ABA's suggestion to refer to the ''low-floor'' feature of urban transit buses in defining the buses. Among other things, there is a lack of objectivity in the term, ''low-floor.''

We disagree with Gillig and others suggesting that buses sold for or used to provide public transportation services, regardless of configuration, be excluded from coverage of the rule. We have decided not to use the ''urban bus'' definition in 40 CFR 86.091–02 because several of its terms are not specific enough for FMVSS purposes. Moreover, we are concerned that some attributes of the definition would exclude buses that should be included in this rulemaking, over-the-road buses. Gillig suggested that we adopt the California Air Resources Board (CARB) clarification of ''urban bus.'' We have decided not to do so, because CARB's definition would exclude commuter buses (over-the-road buses), which we intended to include in the definition of ''motorcoach.''

It was NHTSA's intent in the NPRM to require lap/shoulder seat belts on ''over-the-road'' buses operated by transit agencies. Over-the-road buses used by transit agencies and over-the-road buses used by private companies for intercity transport both carry large numbers of passengers over long distances, and at highway speeds. Given the occurrence of a crash, the risk of fatality is the same for both groups of buses. It is not uncommon to see commuter express buses traveling on the highway alongside privately-operated tour and charter buses of nearly identical construction. We acknowledge that the public transit agencies' safety record for operating commuter express service is better than the safety record shown by some private sector operators. However, given the overall similarity of the buses in construction and use, we cannot distinguish, from a public safety standpoint, good reasons for requiring

[78] The Motorcoach Enhanced Safety Act excludes a bus used in public transportation provided by, or on behalf of, a public transportation agency from its meaning of ''motorcoach.'' However, we are applying this final rule to over-the-road buses used for public transportation based on determinations we have made pursuant to NHTSA's Vehicle Safety Act authority, 49 U.S.C. 30111, which has existed and continues to exist prior to and separate from the Motorcoach Enhanced Safety Act provisions. The Motorcoach Enhanced Safety Act does not indicate an intent by Congress to limit NHTSA's rulemaking authority under the Vehicle Safety Act to issue regulations for vehicles not covered by the Motorcoach Enhanced Safety Act. We believe that the Act provides a minimum ''floor'' for this regulation's scope, and not a ''ceiling'' to its reach. Thus, the Motorcoach Enhanced Safety Act calls out a regulation for ''over-the-road buses'' without limiting our authority under the Vehicle Safety Act to regulate other buses as appropriate, including over-the-road buses used in public transportation.

passenger lap/shoulder seat belts in only privately-operated versions of the commuter express buses when the risk of rollover in a crash, risk of fatal or serious injury in a rollover, and risk of fatal or serious injury in all crashes are the same for both groups of buses.[79]

To address confusion about the transit bus exclusion, in this final rule we have decided to adopt a more objective, simple description of ''transit bus.'' As suggested by APTA, we removed the terms ''fixed route'' and ''frequent stops'' since those terms are not sufficiently clear in meaning. In place of these terms, we have incorporating a reference to a structural feature which is present for transit operation along a route that makes frequent stops, a ''stop-request system.'' The terms are no longer needed since a bus with a ''stop-request system'' will likely be making frequent stops and thus operated in a stop-and-go manner.

We have removed the phrase ''. . . operation as a common carrier . . .'' and added instead the phrase ''public transportation provided by, or on behalf of, a State or local government.'' This is similar to APTA's suggestion, but adds additional, important detail. We have also added language that makes clear that an ''over-the-road bus'' does not qualify to be a transit bus, even if it has a stop-request system. We added text that defines ''over-the-road bus'' as in section 3038(a)(3) of TEA–21. Section 3038(a)(3) of TEA–21 states that the term ''over-the-road bus'' means a bus characterized by an elevated passenger deck located over a baggage compartment.

Gillig stated that transit buses are ''used interchangeably in commuter and inter-city service with infrequent stops and on fixed routes with frequent stops.'' The commenter stated that our proposal had the effect of ''requir[ing] transit properties to know at the time they place an order for a bus what specific service the bus will be put into during its entire 12 year life, so that it can be configured appropriately.'' We believe that the revised language adopted today resolves the uncertainty to which Gillig refers. Transit procurers purchasing a new bus with a GVWR greater than 11,793 kg (26,000 lb) will know this: (a) If the bus is an over-the-road bus, it will have passenger lap/shoulder seat belts; (b) if it is not an over-the-road bus, and the bus lacks a stop-request system, it will have passenger lap/shoulder seat belts.

f. School Buses

NHTSA stated in the NPRM that the initiation of rulemaking to require passenger lap/shoulder seat belts on motorcoaches was not meant to imply that seat belts are needed in school buses with GVWRs greater than 4,536 kg (10,000 lb) (''large school buses'') (75 FR at 50978). The preamble referred to an October 21, 2008 **Federal Register** document[80] that had explained NHTSA's decision against requiring seat belts on large school buses. Nevertheless, a number of commenters suggested that passenger seat belts be mandated for these buses.

On August 25, 2011, we again addressed this issue in a separate matter, denying petitions for rulemaking to mandate passenger seat belts on large school buses (76 FR 53102).

The issue of seat belts in school buses has been thoroughly discussed in the two **Federal Register** documents cited above. This issue is outside the scope of this rulemaking and will not be further discussed in today's final rule.

g. Agency Observations

We reiterate the observation made earlier in this preamble that it appears that one of the problems with the NPRM regulatory text was that it proposed a definition of ''motorcoach'' using a traditional term (''motorcoach'') to describe a nontraditional universe of buses. As a result, some readers were confused or perplexed that a bus they had never considered to be a motorcoach would be a motorcoach under the regulation. Buses can be configured in all sorts of nonconventional ways to meet a host of functions. After reading the comments, we were concerned that each new nontraditional bus configuration could yield ambiguity on the part of the builder and operator—''Is this really a motorcoach?''—because to some, the traditional term will occasionally not ''fit'' some nontraditional bus design.

We also observed that the statement: ''*Motorcoach* includes buses sold for intercity, tour, and commuter bus service,'' seemed to confuse rather than clarify because some commenters were apparently reading it as inclusive rather than illustrative. Many commenters asked about motorcoach services not mentioned in the clause, such as ''special operations'' (e.g., casino services), airport express services, contract services for business or government, and ''charter'' service, wondering if these services were excluded. Greyhound pointed out that the clause was confusing and suggested that NHTSA remove it and instead limit the motorcoach definition to visible attributes and construction characteristics, while accommodating the exclusions of transit buses and school buses.

We agree with Greyhound on this matter. Rather than causing the confusion associated with the NPRM's use of the term ''motorcoach,'' this final rule simply extends the FMVSS No. 208 requirements, and the FMVSS No. 210 requirements which follow from that, to all new over-the-road buses, and to new non-over-the-road buses with a GVWR greater than 11,793 kg (26,000 lb), except for very few bus types. This approach simplifies the regulatory text and makes it easier for the public to understand the applicability of the amended requirements. This accords with plain language principles.

IX. Requiring Seat Belts at Passenger Seating Positions

The NPRM proposed to amend FMVSS No. 208 to require the installation of lap/shoulder seat belts at all passenger seating positions on buses with a GVWR greater than 11,793 kg (26,000 lb) (a class proposed in the NPRM as ''motorcoaches''). NHTSA issued the proposal to address the risk of ejection on ''motorcoaches,'' particularly in rollover crashes, and to improve occupant crash protection in all crashes, particularly frontals. Based on the VRTC examination of the effect that lap/shoulder seat belts had in a full-scale barrier crash of a motorcoach and in subsequent sled testing, NHTSA decided to propose requiring lap/shoulder seat belts at all forward-facing and rear-facing seats. The VRTC frontal crash test program showed that lap/shoulder belts at forward-facing seating positions were effective at preventing critical head and neck injury values from being exceeded, whereas dummies in lap-only belts in forward-facing seats measured HIC and Nij values surpassing critical thresholds. The NPRM proposed that the performance of the lap/shoulder belt anchorages be tested to FMVSS No. 210, as is the case with all other vehicles where seat belts are required.

On July 6, 2012, the Motorcoach Enhanced Safety Act was signed, directing NHTSA to ''prescribe regulations requiring safety belts to be installed in motorcoaches at each designed seating position.'' Under the Act, ''safety belts'' mean lap/shoulder belts (see section 32702(12) of the Act)

[79] We also note that many commuter express buses are sold to private operators when the public transit agencies turn over their fleets. An advantage to having passenger seat belts on the buses is that when these commuter express buses are eventually turned to private service, the used buses will have passenger seat belts on them.

[80] 73 FR 62744, October 21, 2008. Response to petitions for reconsideration, 75 FR 66686, October 29, 2010.

and ''motorcoach'' means ''over-the-road bus'' (a bus characterized by an elevated passenger deck located over a baggage compartment) but does not include a bus used in public transportation provided by, or on behalf of, a public transportation agency, or a school bus (see section 32702(6) of the Act).

Comments

Many commenters soundly supported the proposal to require lap/shoulder belts for motorcoach passengers. These included: NTSB, Consumers Union, Advocates for Highway Safety, Center for Auto Safety, National Association of Bus Crash Families/West Brook Bus Crash Families, groups representing pediatricians and child passenger safety advocates, and school bus transportation organizations. Seat suppliers IMMI and American Seating, and the Automotive Occupant Restraints Council supported the proposal, as did 31 of approximately 42 private individuals who commented.

Motorcoach transportation providers were divided in their reaction to the proposed requirement for lap/shoulder seat belts for passengers. The operators of the larger fleets in the industry were generally supportive of the proposal. As noted below, there were concerns expressed by providers about costs associated with the upkeep and maintenance of seat belts and enforcement of belt use.

Many commenters did not support the proposal.

The majority of smaller transportation providers opposed having seat belts for passenger seating positions. Most of these commenters cited the excellent overall safety record for their industry, increased cost, low belt use rate, and difficulties in enforcing seat belt use. About 30 submitted a form letter that stated that the costs associated with a retrofit requirement would put many companies out of business since they are already operating at or close to a loss.

Also opposed to the proposal were 10 individuals who generally cited the low annual number of motorcoach fatalities, possible low seat belt use rate, perceived poor comfort, difficulty of enforcing use, and a belief that the cost per life saved was high. Many suggested that efforts should be placed on ''more meaningful'' safety reforms than seat belts, such as driver training programs, limiting the driver's operating hours and/or distance traveled between breaks, and monitoring driver performance.

The People Republic of China (PRC) suggested that seat belts be required only in the first row or any forward seat without ''obvious shielding'' and remain optional for all other passenger seating positions. The commenter suggested that passengers in other rows will have seat backs in front of them to shield them and thus it is unreasonable to assume that these passengers will be ejected because there is no seat belt. PRC also stated many passengers may not use lap/shoulder belts since ''the motorcoach is a public transportation tool, travelling at relatively slow speed, and most of the passengers travel on shorter routes, going on and off frequently.'' [81]

Bus manufacturers generally did not overtly support or oppose the proposal, but most expressed concern about one or more aspects of it. MCI believed that the NPRM's foundation for a claim of enhanced rollover protection is ''significantly speculative and not based on demonstrated fact,'' and that NHTSA should conduct more research on this. Turtle Top asked that seat belts be a safety option. Blue Bird indicated that it supported NHTSA's efforts but asked that NHTSA exclude buses that met Federal school bus roof crush and occupant protection (lap belt) requirements. Several European bus manufacturers (Van Hool, Setra) stated that the FMVSS No. 210 seat belt anchorage requirement will cause seat backs to be too rigid, and suggested we adopt European belt anchorage requirements instead.[82]

Agency Response

In 1999, 2004, and 2008, the country experienced a series of catastrophic heavy bus crashes.[83] May 1999—bus crash outside of New Orleans, Louisiana, 9 ejections, 22 fatalities and 16 serious injuries. October 2004—crash of a 47-passenger bus near Turrell, Arkansas, 30 ejections, 14 passenger fatalities and the driver. January 2008—crash of a bus near Mexican Hat, Utah, 50 ejected and 9 fatalities. August 2008—crash of a bus carrying 54 passengers near Sherman, Texas, 17 fatalities. October 2008—crash of a bus heading from Sacramento, 12 ejected, 10 fatalities, over 30 injured.

These crashes, and others, involved buses of the very types we are covering under today's final rule.

Some commenters believe that if the buses had seat belts, ''it is likely . . . [friends and family members and others] would be alive today,'' [84] while others believe that a claim of enhanced rollover protection due to seat belts is ''significantly speculative.'' Some commenters suggested that the NPRM represents ''too much solution for not enough problem,'' [85] and that it targets an ''insignificant problem'' (''twice as many Americans are killed each year by fire ants [than on motorcoaches]'' [86]). Some did not think a seat belt requirement was worthwhile because they doubted the seat belts would be worn.

We issued this final rule in accordance with the Vehicle Safety Act and the Motorcoach Enhanced Safety Act. We carefully assessed the safety need for the standard. NHTSA prescribes motor vehicle safety standards that protect the public against unreasonable risk of accidents occurring because of the design, construction, or performance of a motor vehicle, and against unreasonable risk of death or injury in an accident. In prescribing this standard, we considered all relevant, available motor vehicle safety information, and considered whether a standard is reasonable, practicable, and appropriate for the types of motor vehicles for which it is prescribed.

In issuing this final rule, NHTSA considered the relevant, available motor vehicle safety information, without speculation or conjecture. After considering all relevant, available safety information, we determined that the standard is warranted. We have assessed the benefits and costs of this final rule, both quantitative and qualitative, and have made a reasoned determination that its benefits justify its costs. In addition, the Motorcoach Enhanced Safety Act directs that over-the-road buses must have ''safety belts'' (lap/shoulder belts).

We have found an unreasonable risk of death or injury that will be addressed by this final rule. Although fatal crashes of the affected vehicles do not occur frequently, when serious crashes do occur, these can cause a significant number of fatal or serious injuries in a single event, most often due to rollover and ejection, but also due to passengers colliding with objects or structures within the bus. From 2000–2009 FARS data, 55 percent of the fatalities in fatal crashes of the affected vehicles were in rollovers. The vast majority of fatalities in rollovers were ejections. Forty-two percent of fatalities are in frontal crashes. While serious crashes resulting

[81] The last sentence seems to be describing transit bus transportation. [Footnote added.]

[82] Issues related to FMVSS No. 210 will be addressed in a later section of this preamble.

[83] These and other heavy bus crashes were summarized in the NPRM at 75 FR 50964–50965.

[84] National Association of Bus Crash Families/West Brook Bus Crash Families, October 18, 2010.

[85] NHTSA–2010–0112–0009.

[86] NHTSA–2010–0112–0001.

in occupant fatality do not occur frequently, when they do occur in the affected vehicles, passengers are exposed to heightened risks of rollover and ejection and harm from collision.

There is a reasonable and practicable way to reduce the risk of fatality or injury in crashes of the covered vehicles. The risk of ejection can be reduced by seat belts, a simple, effective, and relatively inexpensive countermeasure. Lap/shoulder seat belts are estimated to be 77 percent effective [87] in preventing fatal injuries in rollover crashes and 82 percent in preventing AIS 2–5 severity injuries, primarily by preventing ejection. Moreover, we estimate that even at a minimum passenger seat belt usage rate of only 4 to 5 percent, the rule will remain cost effective. The availability, cost, and effectiveness of this countermeasure render the risk of death or injury in a serious crash of the affected vehicles unreasonable. As a result of this rule, when the covered buses are involved in the serious crash, the risk of death or injury to passengers will be significantly reduced.

Lap/shoulder seat belts reduce the risk of occupant fatality and injury when the occupants are not ejected. Nearly half of the fatalities (45 percent) in the covered vehicles are in non-rollover crashes, and more than half of these are not ejected. In light vehicles, lap/shoulder belt effectiveness for fatalities is estimated to be 29 percent in frontal crashes, 42 percent in side crashes; for injuries of AIS 2–5 severity level, it is 34 percent in frontal crashes and 47 percent in side crashes. *Id.* In our seat belt test program conducted pursuant to the 2007 ''NHTSA's Approach to Motorcoach Safety'' plan, lap/shoulder belts prevented elevated head and neck injury values and provided enhanced occupant protection compared to lap belted and unbelted configurations. Hence, available safety information indicates that lap/shoulder belts will reduce the risk of death and injury in non-rollover crashes as well.

Motor vehicle safety information from the best available research programs demonstrates further a sound scientific basis supporting this final rule.

Data from VRTC's December 2007 full-scale vehicle crash test show that lap/shoulder seat belts have a significant effect in a 48 kilometers per hour (30 miles per hour) frontal barrier crash test. All belted test dummies remained securely fastened in their motorcoach seats, while the unbelted dummies were typically ejected from their seats and ended up in the aisle or in the seats in front of them (75 FR at 50967). The agency followed up the full-scale barrier test by conducting sled tests (laboratory crash simulations) using a representation of the crash pulse from the barrier test. In the sled tests, we evaluated the bus seats without seat belts, the seats with lap/shoulder belts, and the seats with lap only belts. We tested the seats with different size dummies and in frontal and oblique (15°) impact configurations and with and without loading by unrestrained occupants in the rear seat. The results showed that lap/shoulder belts prevented critical head and neck injury values from being exceeded in almost all configurations using the crash pulse from the bus barrier test.

In addition, data from full-vehicle rollover tests demonstrate the efficacy of lap/shoulder seat belts in even ¼-turn bus rollovers.[88] The tests followed a protocol modeled after the Economic Commission for Europe Regulation No. 66 (ECE R.66) [89] full-vehicle ¼-turn rollover test. The ECE R.66 test tips the bus using a platform that raises one side of the bus at a steady rate of not more than 5 degrees/second until the vehicle reaches its unstable equilibrium, commences a quarter-turn rollover, and strikes a hard surface. (The rollover test is illustrated below in Figure 5).

[87] Estimated based on Kahane, ''Fatality Reduction by Safety Belts for Front-Seat Occupants of Cars and Light Trucks,'' December 2000, Washington, DC, National Highway Traffic Safety Administration. We are applying the effectiveness of lap/shoulder belts in rear outboard seating positions of passenger cars as a proxy measure for the effectiveness of lap/shoulder belts in motorcoaches. Real-world data are not available for the effectiveness of lap/shoulder belts in motorcoaches.

[88] National Highway Traffic Safety Administration, ''ECE Regulation 66 Based Research Test of Motor Coach Roof Strength, 1992 MCI MC–12 Motor Coach, NHTSA No.: CN0801,'' May 20, 2008; National Highway Traffic Safety Administration, ''ECE Regulation 66 Based Research Test of Motor Coach Roof Strength, 1991 Prevost LeMirage Motor Coach, NHTSA No.: CM0801,'' May 20, 2008; and National Highway Traffic Safety Administration, ''ECE Regulation 66 Based Research Test of Motorcoach Roof Strength, 2000 MCI 102–EL3 Motor Coach, NHTSA No.: MY0800,'' October 1, 2009.

[89] Uniform Technical Prescriptions Concerning The Approval of Large Passenger Vehicles With Regard to the Strength of Their Superstructure.

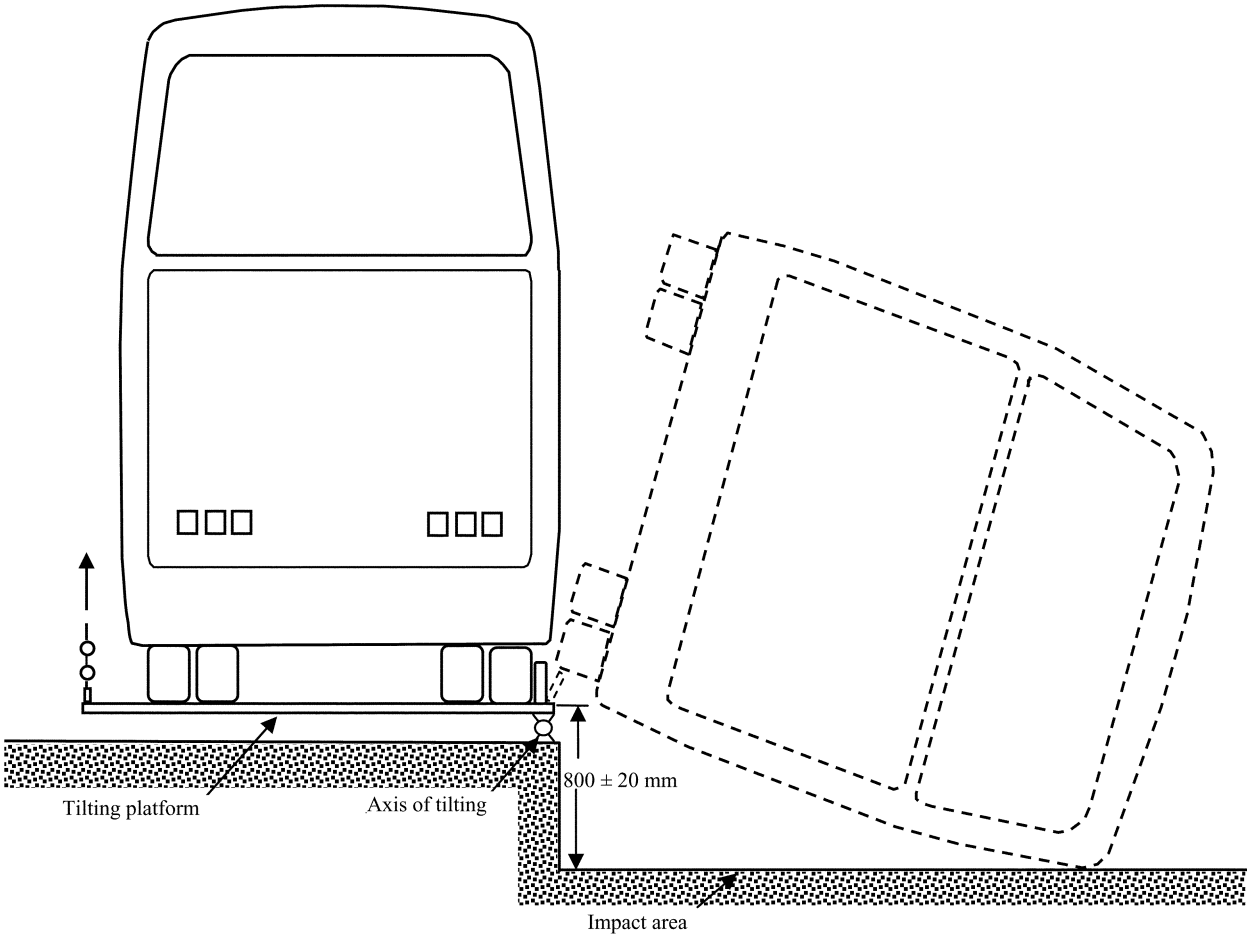

Figure 5: Bus on Tilting Platform

In three tests we conducted, fully-instrumented Hybrid III 50th percentile adult male test dummies were positioned in aisle seats opposite the impact side, with one dummy unrestrained and the other restrained by a seat-integrated lap/shoulder belt. In all three tests, the restrained dummies remained secured to the seat and produced injury values significantly below FMVSS No. 208 Injury Assessment Reference Values (IARVs) for the Hybrid III 50th percentile adult male test dummy. In contrast, the unrestrained dummies fell head first across the occupant compartment and struck the bottom of the luggage compartment and/or the side windows, which produced injury values well above the IARVs in two of the tests. Injury values for the restrained dummies never exceeded 40 percent [90] of the IARV, while the injury values for the unrestrained dummies reached levels up to 590 percent of the IARVs. Alarmingly too, the final resting position of the unrestrained dummy in all three tests was on the impact side window, which has been the most common ejection portal in real-world rollovers.

In response to PRC, these rollover test data and the data from the full-scale barrier crash test support our finding that shielding the motorcoach passenger between seat backs is not enough to prevent ejection from the area between the seats or from the vehicle. Lap/shoulder seat belts are needed on these vehicles. In response to MCI, we will not postpone this final rule until further research is done. The technical basis supporting this rule is robust and known now.

The testing has also demonstrated that installing lap/shoulder seat belts in motorcoaches is practicable. Today, lap/shoulder belts integral to the vehicle seat are offered on many new motorcoaches. The lap/shoulder seat belt/seating systems are readily available from seat suppliers and can be installed by the vehicle manufacturer. Some seat suppliers offer to help provide the engineering analyses bus manufacturers can use to certify compliance with Federal motor vehicle safety standards.[91]

We will not agree to allow lap/shoulder seat belts to be installed at the manufacturer's or purchaser's discretion. The benefits of lap/shoulder belts are realized in all crash modes and will have a significant impact on safety in the deadliest of crashes, rollovers and frontal impacts. When the agency has made a determination to issue an FMVSS to meet a safety need, the benefit of the FMVSS are applied to all travelers equally and are not made optional. Moreover, in this case it would be an unjust policy that provides no choice to the persons who would be

[90] The restrained dummy that produced an injury value of 40 percent of the IARV was positioned in a seat that detached from the vehicle during the impact due to displacement of the side wall and rolled across the occupant compartment. This seat was installed by the agency to gauge lap/shoulder belt effectiveness and was not an original equipment seat. Injury values for restrained dummies where the seat remained attached to the vehicle did not exceed 12 percent of the IARV.

[91] *http://www.cewhite.com/testing-lab* [Last accessed February 28, 2012.]

protected by the lap/shoulder seat belts—the passengers—as to whether the lap/shoulder belts will be provided in the buses in which they ride. For over-the-road buses, the Motorcoach Enhanced Safety Act requires these buses to have lap/shoulder belts.

In 2007, the majority of the motorcoach trips (65 percent) were made by children and senior citizens.[92] This final rule protects these vulnerable populations, as it protects all persons.

Although fatal crashes of the covered vehicles occur infrequently, the crashes can affect the public's confidence in the safety of motorcoach transportation. Then-NTSB Acting Chairman and board member Mark V. Rosenker noted: ''[M]otorcoach travel is also one of the safest modes of transportation, but when accidents and fatalities do occur, the public's perception of the safety of motorcoach travel can be badly damaged, and once they perceive something as being unsafe it is very hard to change their minds.'' [93] Mr. Rosenker observed: ''[W]hen tragedies occur they attract a huge amount of media attention, and as a result, the potential exists for the public to lose confidence in our transportation systems.'' In its comments on the NPRM, the United Motorcoach Association stated: ''Maintaining the confidence of consumers is of critical importance to the motorcoach industry.''

Today's final rule will help sustain public confidence in the safety of the covered vehicles. Today's final rule is a first step toward a time when news of a serious crash of a subject bus is not associated with a catastrophic number of fatal and serious injuries. As consumers become familiar with lap/shoulder seat belts on the covered buses and more aware of the protection they provide, we expect not only use rates to increase, but public confidence in the safety of the affected buses to be bolstered as well.

A number of private transportation providers asked who will enforce a seat belt use requirement and what type of violations will be cited to the carrier if passengers are found not wearing their seat belts. Arrow Coach Lines suggested that the states should consider adopting mandatory seat belt use laws on buses equipped with seat belts, but also suggested that enforcement will be a problem since police officers cannot see inside a bus while it is traveling on a highway. American Bus Association recommended that this rulemaking be followed and supported by a strong DOT effort to encourage motorcoach seat belt use, including incentives or sanctions to states to enforce seat belt use rules and the DOT should support such efforts in reauthorization.

Regarding requirements that drivers should instruct passengers on seat belt use, it is correct that such requirements are outside of NHTSA's regulatory authority.[94] United Motorcoach Association suggested that FMCSA should revise their guidance for pre-trip announcements and/or instructions to include reminders and directions for passengers regarding the use of seat belts. DOT and FMCSA are aware of and are considering these comments concerning the drivers' role in instructing passengers to use their seat belts. DOT, FMCSA and NHTSA are continuing work on the Departmental plan on motorcoach safety and are considering the next steps that could be taken to increase passenger use of the seat belts.

We recognize that seat belt use rates could be low at first, possibly because the belts may seem strange and unfamiliar in the bus. However, we also believe passengers' attitudes about using seat belts can change, just as public opinion changed on using seat belts in passenger vehicles and on restraining children in child safety seats. In 1994 passenger vehicle seat belt use rate was 58 percent. The 2010 data show the highest ever passenger vehicle seat belt use rate at 84 percent.[95] Mandatory seat belt use laws and child safety seat laws no doubt had a role in changing attitudes, but we believe that attitudes also changed when people became more aware of the safety benefits provided by the safety equipment. We believe that, as more and more covered buses are manufactured with lap/shoulder seat belts, the public's familiarity with and awareness of the safety benefits of the lap/shoulder belts on these buses will grow, and with that, seat belt use rates will too.

Even today, we believe that lap/shoulder seat belts in covered buses are cost effective with just a usage rate of only 4 to 5 percent. It is only if the belts are available that passengers will have the opportunity, the choice, to take the step to use them.

Some transportation providers expressed concerns about having to pay more for buses with seat belts, and the depressing of business because of cost being passed on to passengers. A few said that the resale value of its used buses will be substantially reduced and that, since sale of the used buses helps fund the purchase of new buses, some will not be able to purchase new motorcoaches within a normal 12-year cycle.

We have weighed these matters in our decision-making. The incremental cost of this final rule will be relatively small. The agency estimates that the highest annualized cost due to this rule, including fuel cost, is $7.0 million. According to the 2008 Motorcoach Census,[96] in 2007 there were 751 million trips taken on motorcoaches in the U.S. and Canada. If the increase in price of a motorcoach were distributed among these trips, it would account to a one cent increase in the price of a ticket.

As far as the claimed decrease in the resale price of motorcoaches, secondary and tertiary effects of safety regulations are highly speculative and are not typically attributed to the cost of a rule. Even if we were to assess these effects, the commenters did not provide information enabling us to assess or substantiate these claims.

We note that the commenters depict a scenario in which any change to the FMVSSs that requires a new or improved safety feature will have the effect of reducing the resale value of the used vehicles that do not have the safety feature. We note further that this scenario would apply to all vehicles, not just motorcoaches. A person selling a used car that does not have, for example, side impact air bags, competes against a person selling a used car that does. It would be unreasonable for NHTSA not to adopt an FMVSS that requires a new safety device or upgrades to an existing safety feature because the effect of the amendment would lower the demand for some used vehicles. We note also that the demand for vehicles that have the safety feature (e.g., passenger lap/shoulder seat belts on buses) has the positive effect of possibly expediting the transition to lap/shoulder seat belt-equipped buses in the fleet.

Arrow Coach Lines commented that the costs associated with maintenance and upkeep of passenger seat belts in

[92] In 2007, the majority of the motorcoach trips (65 percent) were made by children and senior citizens. ''Motorcoach Census 2008, A Benchmarking Study of the Size and Activity of the Motorcoach Industry in the United States and Canada in 2007.'' Paul Bourquin, Economist and Industry Analyst, December 18, 2008.

[93] Remarks of Mark V. Rosenker, Acting Chairman NTSB, before the Greater New Jersey Motorcoach Association, June 3, 2009, *http://www.ntsb.gov/news/speeches/rosenker/mvr090603.html* [last accessed February 3, 2012]

[94] Similarly, a few commenters asked about the use of seat belts at wheelchair positions. This final rule does not require the use of seat belts by any passenger.

[95] DOT HS 811 378. Traffic Safety Facts Research Note: Seat Belt Use in 2010—Overall Results, September 2010. *www-nrd.nhtsa.dot.gov/Pubs/811378.pdf.*

[96] *Id.*

the covered buses were not discussed in the NPRM, and stated that seat belts will be a ''maintenance nightmare.'' Trans-Bridge Lines stated that it has had seat belts cut, tied into knots, and intentionally broken in their seat belt-equipped buses, which has added additional expenses for their company to inspect, maintain, and repair the seat belts.

In response, we first want to be clear that there is no requirement in the final rule that applies to the operators, such as a maintenance requirement. Second, we do not believe that the costs of maintaining the belts, if any, will be impactful. The commenters did not provide any data on this cost. The agency does not have reason to believe that this work will need to be done more than incidentally or that it will amount to a real cost, attributable to the cost of the rule. Belt maintenance work is not generally recognized as a necessity or as subject to a schedule (unlike safety systems such as tires, where it is generally recognized that the average tire lasts 45,000 miles). Further, we expect that the cost of maintaining the belts, if any, to be very small in comparison to the cost of upgrading the buses with seat belts. In response to a commenter, the assertion that non-seat belt related safety items may suffer in some bus garages due to the rule because the time required to maintain belts may come at the expense of checking other safety items is speculative and we cannot give credence to it without some kind of substantiation of this serious claim.

Three private transportation providers expressed concern over the impact on liability and insurance costs for their non-seat belt equipped motorcoaches if passenger seat belts are installed in new motorcoaches. Vandalia Bus Lines asked how it will market the current fleets without seat belts, and how will insurance companies handle the operators who do not install seat belts because of retrofit costs.

On the issue of liability and private insurance costs to operators of existing non-seat belt equipped motorcoaches, the commenters did not provide any estimate of the potential increase in operating costs. The assertions about these effects are highly speculative, and have not been substantiated or quantified by the commenters. Further, the assertions are at most related to the cost of doing business and not to the cost of the rule. We also believe that, to the extent commenters are arguing against adoption of the NPRM, it would be unreasonable for NHTSA not to adopt an FMVSS that establishes new safety requirements or upgrades an existing safety feature because of assertions about the effect of the amendment on liability and insurance costs associated with operating used vehicles that do not meet the new or upgraded standard.

Other DOT Initiatives

Some motorcoach transportation providers suggested that NHTSA direct regulations towards areas other than seat belts, such as improving vehicle fire resistance, reducing driver inattention and detecting fatigue, and adding passive safety elements such as increased roof strength, improved emergency exits, and seat padding.

This regulation mandating the installation of lap/shoulder belts on over-the-road buses is required by the Motorcoach Enhanced Safety Act. At the same time, many of the alternatives to a lap/shoulder seat belt requirement suggested by various motorcoach operators, such as improving fire resistance, increasing structural integrity, and reducing driver fatigue and inattention, are being explored by DOT as outlined in the Motorcoach Safety Action Plan, and in furtherance of provisions in the Motorcoach Enhanced Safety Act regarding research and rulemaking. However, these actions will be complementary to, not a replacement for, this action on seat belts. Motorcoach crashes are not exclusive to a particular type of enterprise or driver. DOT is taking all reasonable efforts to improve the crashworthiness and crashavoidance characteristics of the vehicles; we have determined that providing passengers lap/shoulder seat belts will amount to an unprecedented enhancement of motorcoach safety.

With regard to other DOT initiatives, FMCSA notes that, although the amendments to FMVSS Nos. 208 and 210 are not applicable to new buses built for sale and use in Canada, FMCSA is developing a rulemaking to cross-reference the new FMVSS requirements, the effect of which would be to require motor carriers operating in the U.S. to have seat belts on the buses. FMCSA explains that it has traditionally held all motor carriers operating in the U.S. to the same safety requirements via 49 CFR Part 393, ''Parts and Accessories Necessary for Safe Operation,'' and that the FMCSA rulemaking would apply to Canada-domiciled bus operators traveling into the U.S. Thus, FMCSA states, in the event FMCSA adopts a rule to require carriers to maintain the seat belts, those requirements may be applied to Canada- and Mexico-domiciled carriers operating buses manufactured on or after the compliance date included in the NHTSA rule.

In summary, for the above reasons, NHTSA has deemed unreasonable the present occupant fatality risk in buses with a GVWR greater than 11,793 kg (26,000 lb), given the risk of fatality and serious injury in rollover and frontal crashes, and the proven protection afforded by lap/shoulder seat belts, an available and relatively inexpensive countermeasure. NHTSA has issued today's final rule to reduce that risk, and to fulfill the statutory mandate of section 32703(a) of the Motorcoach Enhanced Safety Act of 2012.

X. Type of Belt System on Forward-Facing Seats

The NPRM proposed to require lap/shoulder belts for forward-facing passenger seating positions, and not lap belts.

Comments

1. Van Hool and Setra requested that lap or lap/shoulder belts that meet the European regulations be allowed as an alternative to the proposed requirements.

2. Blue Bird said that it manufactures non-school buses with a GVWR greater than 11,793 kg (26,000 lb). The buses meet the Federal school bus safety standard for roof crush (FMVSS No. 220, ''School bus rollover protection'') and have seats that meet the Federal school bus standard for passenger crash protection (FMVSS No. 222, ''School bus passenger seating and crash protection''). Blue Bird requested that we allow buses that meet FMVSS No. 220 and that have passenger seats meeting FMVSS No. 222 to have lap-only belts instead of lap/shoulder belts.

3. Prevost, a coach manufacturer,[97] requested that lap-only belts be allowed at any seat where the occupant is not at risk of striking its head.

Agency Response

The Motorcoach Enhanced Safety Act directs NHTSA to ''prescribe regulations requiring safety belts to be installed in motorcoaches at each designed seating position.'' ''Safety belts'' mean lap/shoulder belts (see section 32702(12) of the Act). Consistent with the Motorcoach Enhanced Safety Act, this final rule requires lap/shoulder belts at each designated seating position in over-the-road buses, regardless of the direction the seat faces.

For buses other than over-the-road buses, this final rule requires lap/shoulder belts at each passenger

[97] Prevost is a division of Volvo Group Canada Inc.

designated seating position, except side-facing seats may be equipped with a lap belt instead of a lap/shoulder belt. We respond to the comments as follows.

1. We decline to allow the option of lap-only belts at forward-facing passenger seating positions on the buses, even lap belts that meet European regulations (ECE R.14 and ECE R.80 are discussed in section XVI of this preamble) and even if the seats meet some of the requirements of FMVSS No. 222.

Our decision is based on the results of NHTSA's test program conducted as part of the agency's 2007 ''NHTSA's Approach to Motorcoach Safety'' plan. These tests found that lap/shoulder belts in forward-facing seats prevented elevated head and neck injury values and provided enhanced occupant protection compared to lap belts.

In the VRTC full-scale over-the-road bus crash, the lap/shoulder-belted dummies exhibited the lowest injury measures and improved kinematics, with low head and neck injury measures and little movement outside the area between seats, compared to the lap-belted dummies and unbelted dummies.

In the VRTC sled tests of lap/shoulder-belted dummies—

- Average HIC and Nij values were low for all dummy sizes and below those seen in unbelted and lap-belted sled tests. This was consistent with the lap/shoulder belt results from the full scale crash test.
- Lap/shoulder belts retained the dummies in their seating positions and were able to mitigate head contact with the seat in front.
- When lap/shoulder-belted dummies were subject to loading (of their seats) by an aft unbelted dummy, there was additional forward excursion of the lap/shoulder-belted dummies, but the resulting average head injury measures were still relatively low in most cases, even in cases when the head contacted the seat in front.
- Lap/shoulder-belted dummies were better restrained in the oblique sled tests, conducted at a 15-degree angle, than lap-belted dummies. They had lower injury measures and were retained in their seats.

In contrast to the lap/shoulder-belted dummies, the results for lap only dummies showed—

- HIC and Nij measures exceeded the IARVs for virtually all the dummies tested (there was a 50th percentile male dummy which measured a HIC of 696 (99 percent of the IARV limit)).
- The poor performance of the lap belt restraint in the sled tests was consistent with the lap belt results from the full scale motorcoach crash test.

2. Blue Bird requested that the final rule allow the option of lap-only belts at forward-facing passenger seating positions on buses that meet FMVSS No. 220 and FMVSS No. 222. Our reasons to decline to allow the option of lap-only belts at forward-facing passenger seating positions are explained above. Further, if the passenger seats on the bus did not meet FMVSS No. 222's seat spacing requirements, then lap belts alone may not provide a sufficient level of occupant protection on the buses. This is because the compartmentalization protection offered by FMVSS No. 222 is not simply predicated on the physical characteristics of the seat, but also the limited seat spacing. This limited spacing serves to control the occupant velocity such that impacting the forward seat back is less injurious.

3. We decline Prevost's suggestion to allow lap-only belts at any seat where the occupant is not at risk of striking its head. Considering that the highest accelerations in motorcoach crashes are typically produced during frontal or rear impacts, and these accelerations are predominantly in the longitudinal direction, lap/shoulder belts will provide the best protection for non-side facing occupants in all forward-facing seats, even for seats that are in a ''clear'' area (no chance of head impact). NHTSA crash and sled testing of motorcoaches and motorcoach seats clearly showed the superior protection offered by lap/shoulder belt as compared to lap belts for forward-facing occupants. Lap/shoulder belts are superior to lap belts in a frontal crash because they provide more surface area for an occupant's body to react with during a crash when compared to lap-only belts, and the forces are spread over the pelvis and torso (with lap/shoulder belts) rather than the pelvis alone (as with lap-only belts).

XI. Integrated Anchorages

We proposed that the lap/shoulder seat belt anchorages, both torso and lap, be required to be integrated into the seat structure for passenger seats, except for the belt anchorages in the last row of the coach (if there is no wheelchair position or side emergency door behind these seats) and in the driver seating position. We proposed integral lap/shoulder belts on the buses to ensure that seat belts for inboard seat positions, in particular, are not mounted such that the belt webbing could impede safe passage through the bus interior during emergency egress. This provision is consistent with a 2010 amendment adopted regarding passenger crash protection on small school buses and optionally provided seat belts on large school buses (FMVSS No. 222).

The last row was proposed to be excluded from the requirement because the location and style of the last row seats in motorcoaches make it possible to place belt anchorages behind or to the side of the seat, where the belt webbing would not impede safe travel in and out of the seat.[98]

We proposed excluding the driver's seating position from the requirement because the driver's compartment is usually separated from the passenger compartment by a bulkhead or partition and passengers are less likely to be entangled in the driver's belt system during egress.

Comments

All persons commenting on this issue were generally supportive of the requirement.

C.E. White stated that the driver lap/shoulder belt should be integrated into the seat frame and it should include an adjustable shoulder height mechanism.

American Seating recommended that seat integrated anchorages not be made a requirement for side-facing seats. American Seating argued that side-facing seats should be excluded for the same reason as the last row of seats since non-integrated seat belts at these positions would not impede occupant egress.

Response

We do not agree that the driver position seat belts should be integral to the seat. As stated in the NPRM, the reason for requiring passenger seats to have integrated lap/shoulder seat belts is to ''ensure that seat belts for inboard seat positions, in particular, are not mounted such that the belt webbing could impede safe passage through the bus interior during emergency egress.'' We do not find there to be a similar need for the driver position. The driver seating position was originally excluded in the NPRM from such a requirement because the driver compartment is usually separated from the passenger compartment by a bulkhead or partition. The driver's shoulder belt anchorage can be attached to the seat structure, side wall, or bulkhead without increasing risk of entanglement of the driver or passengers during egress. Though there may be a comfort advantage for integrating seat belt

[98] However, we proposed that if the seat plan has a wheelchair position located behind the rearmost passenger seat, or a side emergency door rearward of it, the rearmost passenger seat must have its seat belt assembly anchorages attached to the seat structure to reduce the risk of tripping, entanglement, or injury.

anchorages into the driver seat, there is no clear safety benefit in requiring them to be integrated.

In reference to C.E. White's request that the shoulder height be adjustable, we note that all the fit and adjustment requirements of S7.1 of FMVSS No. 208 are being required for the driver position of affected buses. Regarding AORC's request that the lap/shoulder belt move with any suspension seat, we note that we believe this issue is already sufficiently addressed for all buses by the regulatory text of FMVSS No. 208. This section has a requirement that the automatic locking retractor used at a driver seating position of a suspension system must be attached to the seat structure that moves as the suspension system functions. In addition, the lap belt portion of a seat belt equipped with an automatic locking retractor must allow at least 19 mm (¾ inch), but less than 76 mm (3 inches) of webbing movement before retracting webbing to the next locking position. We see no need for any changes to this section for the affected vehicles.

The agency agrees with American Seating's view that seat-integrated anchorages need not be made a requirement for side-facing seats. We note that side-facing seats were excluded from the requirement for integrated anchorages based on the regulatory text presented in the NPRM. We agree to adopt this text in the final rule, thereby excluding any passenger seat that does not have another seat, a wheelchair position, or a side emergency exit door behind it, for the reasons provided in the NPRM.

In addition, NHTSA is excluding any right front outboard seating position that is not rearward of the driver's seat from the requirement that the lap/shoulder seat belt system must be integrated into the seat structure. (The lap/shoulder belts are still required for that position, but they do not need to be integrated into the seat structure.) The agency has decided on this provision because under current FMVSS No. 208, the seat belt assemblies of the right front passenger designated seating position and the driver's designated seating position are subject to the same seat belt requirements. Currently, there are final-stage manufacturers, some of which are small businesses, which manufacture body-on-frame buses by combining an incomplete vehicle that has a driver seat and a right front passenger seat (a chassis cab) with a bus body. We wish to address the situation where a final-stage manufacturer obtains an incomplete vehicle in which the driver seat and the right front passenger seat have non-integral lap/shoulder belts. We do not believe there is a safety need to require the final-stage manufacturer to replace the right front passenger seat (which might have non-integral lap/shoulder belts) with a seat that has integral lap/shoulder seat belts. This is because the right front passenger seat is typically located away from an area that passengers will be traversing to egress the vehicle, and because this provision involves only this one passenger seat on the bus.

Such a provision provides flexibility to final-stage manufacturers using chassis cabs. The manufacturer will be able to use the seating systems that were provided by the chassis cab manufacturer without having to replace the right front passenger seat with a seat that has a different belt system.[99]

XII. Seat Belt Adjustment, Fit, Lockability, and Other Requirements

NHTSA proposed that the lap/shoulder belts installed for passengers and drivers include provisions for seat belt adjustment and fit as specified in S7.1 of FMVSS No. 208. Specifying belt adjustment and fit ensure that the lap and shoulder belt portions of the seat belt assembly are able to accommodate passengers whose dimensions range from those of a small child to a large adult male. Through references in FMVSS No. 208, NHTSA proposed that the upper torso restraint must adjust either by means of an emergency-locking retractor that conforms to § 571.209, or by a manual adjusting device that conforms to § 571.209.

In addition, we proposed that the seat belt at each designated seating position, besides the driver position, meet the FMVSS No. 208 lockability requirements. The lap belt portion must be lockable so that the seat belt assembly can be used to tightly secure a child restraint system without the use of any device that must be attached by the consumer to the seat belt webbing, retractor, or any other part of the vehicle. The lap belt must be lockable without any inverting, twisting or other deformation of the belt webbing.

The NPRM also proposed that each seat belt assembly must have a latch mechanism with all the latch mechanism components accessible to a seated occupant, and that the latch mechanism be capable of releasing both the upper torso restraint and the lap belt simultaneously at a single point and by a pushbutton action.

Comments

Seven commenters responded to this aspect of the NPRM, generally supporting requirements for adjustment and fit. There were some questions raised about the lockability requirements, but as explained below, it seemed to some extent that these were based on a misunderstanding of lockable seat belts.

Agency Response

We note that IMMI stated that it is aware of concerns in the industry about lockability requirements being satisfied by an automatic locking retractor (ALR), which the commenter associated with possible increased harm to passengers. The commenter did not elaborate what it meant by ''harm to passengers,'' and we know of no reason why lockability would lead to harm on motorcoaches. Seat belts in passenger cars and other light duty vehicles have had to meet lockability requirements since the 1990s.

The agency disagrees with Setra's concern that passenger seats that use a locking retractor for the lap portion ''will restrict passenger freedom to move during long trips and would be quite disagreeable.'' This final rule requires that all passenger seats in affected vehicles have seat belt assemblies that are equipped with an emergency locking retractor (ELR).[100] When an ELR and lockability are required, vehicle manufacturers commonly use a switchable seat belt retractor (ELR/ALR) that can easily be converted from the ELR mode to the ALR mode to meet both requirements.[101] For a lap/shoulder (Type 2) belt system, the lap portion of the seat belt can also be made lockable by using a continuous-loop seat belt with the switchable retractor providing tension to the lap belt portion through the shoulder belt portion.[102]

[99] In furtherance of this flexibility, this final rule will also subject the seat belt assembly of the right front passenger designated seating position to the requirements applying to the seat belt assembly of the driver's seating position. We conclude there is no safety downside to this approach since it only involves a single passenger seat.

[100] An ELR is a seat belt retractor that locks only in response to the rapid deceleration of a vehicle or rapid spooling out of the seat belt webbing from the retractor, and increases the comfort of the seat belt assembly compared to an automatic locking retractor (ALR). An ALR is a seat belt retractor that locks when the continuous motion of spooling the belt out is stopped. From that point, the seat belt cannot be pulled out any further without first letting the seat belt fully retract into the retractor housing.

[101] A switchable retractor (ELR/ALR) can be converted from an ELR to an ALR without the use of any tools by slowly pulling all of the webbing out of the retractor, which engages the ALR mode, and letting the retractor wind the webbing back up. In ALR mode, the seat belt is lockable for use with child restraints.

[102] A continuous-loop lap/shoulder belt is a three-point belt that uses one continuous piece of webbing that slides through a latch plate. It is

Such seat belt systems, which are commonly used in current light passenger vehicles, can meet the passenger seat ELR and lockability requirements of this rule without significantly restricting the occupant's freedom of motion.

IMMI suggested that we permit bus manufacturers to install child restraint anchorage systems (FMVSS No. 225, ''LATCH'' systems) at some passenger seats in lieu of meeting lockability requirements. SafetyBeltSafe and Safe Ride News suggested that LATCH be required at some passenger seating locations in the buses. We are not adopting these suggestions. Child restraint systems are required [103] to be capable of attachment to the vehicle seat using the seat belt system and using the child restraint anchorage systems. Motorists are familiar with the belt system to attach child restraints to the vehicle seats. Since the public has gained a strong familiarity using seat belts with child restraints, we are adopting the lockability requirement for all passenger seating positions on the covered buses.

We also disagree with SafetyBeltSafe and Safe Ride News that the final rule should require LATCH at some passenger seating locations in the buses covered by this rule. This issue was not proposed in the NPRM. Note also that bus manufacturers are not prevented from offering LATCH to purchasers of their vehicles if they choose to do so.

Setra objected to the idea that the vehicle owner's manual must include information about using a device such as a lockability feature, believing it not to be practical toward providing bus passengers the prescribed information. The agency disagrees with Setra's belief that instructions in the owner's manual on how the seat belt assembly can be made to accommodate a child restraint serve little or no purpose. Though the owner's manual (or other form of written instruction) might not be directly available to the bus passengers, the instructions will be available to the vehicle operator. Instructions regarding the operation of safety-related vehicle systems at both the driver and the passenger seating positions, including those required by FMVSS No. 208, should be available to the bus operator to assist passengers as needed. Such information could pertain to using the seat belt lockability function for the installation of child restraints, and importantly, disengaging the feature when the belt has to be returned to its ELR state for a subsequent adult passenger.

We disagree with IMMI that the adjustable upper shoulder belt anchor point requirement should be identical to the range for larger occupants in FMVSS No. 210 for school bus seats, i.e., 280 mm to 520 mm. We do not agree that the extended range of seat belt adjustment required for school buses is needed for the vehicles affected by this final rule. In travel on the affected vehicles, a booster seat can be more readily used, if needed, to obtain proper shoulder belt fit than on school buses, since an adult would likely be traveling with the child on the commercial bus to provide and supervise use of the booster seat.[104]

After reading Setra's comment, we reviewed proposed S7.1.6 (FMVSS No. 208) and found it was oversimplified in the NPRM. We have corrected the language in the final rule to more closely reflect S7.1.1 of current FMVSS No. 208, from which it was derived. Specifically, the fit requirements have been extended down to the 50th percentile 6-year-old child and the seat back position has been corrected to indicate the nominal design position.

While reviewing Setra's comment on S4.4.3.1(c), we realized that current S7.1.3 of FMVSS No. 208 was unintentionally left out of the proposed amendatory text for the passenger seating positions. S7.1.3 requires that the intersection of the upper torso belt and lap belt in any lap/shoulder belt assembly, when adjusted in accordance with the manufacturer's instructions, must be at least 6 inches from the vertical centerline of a 50th percentile male occupant when measured along the centerline of the lap belt. This is an important feature of proper belt fit that is applicable to most current seating positions.[105] This section has been added to the requirements adopted today for the seating positions on the affected vehicles.

XIII. Passenger Seats That Are Not Forward-Facing

For side-facing seating positions, the NPRM provided manufacturers with the option of installing either a lap or a lap/shoulder belt. This option was consistent with FMVSS No. 208 (S4.4.5.6), which allows lap belts for side-facing seats on buses with a GVWR of 4,536 kg (10,000 lb) or less. The agency proposed to permit lap belts in side-facing seats because we were unaware of any demonstrable increase in associated risk. We also noted that a study commissioned by the European Commission regarding side-facing seats on minibuses and motorcoaches found that due to different seat belt designs, crash modes and a lack of real world data, it cannot be determined whether a lap belt or a lap/shoulder belt would be the most effective.[106]

Comments

Turtle Top asked why require either type of seat belt for side-facing seats. IMMI and American Seating recommended that forward-facing seating be mandated. They believed that mixing forward-facing seating with rear-facing or side-facing seating can result in unbelted passengers colliding with belted passengers during a crash. American Seating claimed that shoulder belts may cause serious neck injuries when applied to side-facing passenger seating positions. These and other comments are addressed below.

Agency Response

The Motorcoach Enhanced Safety Act directs NHTSA to ''prescribe regulations requiring safety belts to be installed in motorcoaches at each designed seating position.'' The term ''safety belts'' means lap/shoulder belts (see section 32702(12) of the Act) and ''motorcoach'' means ''over-the-road bus'' (with certain vehicles excepted). Thus, the Motorcoach Enhanced Safety Act requires over-the-road buses to have lap/shoulder belts at each designated seating position, which includes side-facing seats.

1. In response to Turtle Top, mandating seat belts at side-facing seats is consistent with the Motorcoach Enhanced Safety Act. In addition, such a mandate is consistent with NHTSA's determination that seat belts at side-facing locations will provide a clear benefit in rollovers, especially in preventing ejection. Seat belts are required for side-seating by FMVSS No. 208 in buses with a GVWR of 4,536 kg (10,000 lb) or less for that reason. The Motorcoach Enhanced Safety Act requires seat belts on side-facing seats only in over-the-road buses. Because seat belt systems will be effective in heavy buses generally, we are not going to forgo requiring seat belts at side-facing seats in non-over-the-road buses.

connected at one end to the vehicle at the anchor point and the other to a retractor system.

[103] FMVSS No. 213, ''Child restraint systems.''

[104] IMMI, SafetyBeltSafe and Safe Ride News's comments about potential problems with requiring manually locking belts equipped with switchable retractors on large school buses is outside the scope of this rulemaking.

[105] Passenger seats of large school buses voluntarily equipped with seat belts do not need to meet this requirement because of the unique seat geometry associated with these seats.

[106] *http://ec.europa.eu/enterprise/automotive/projects/safety_consid_long_stg.pdf.*

As to the specific type of seat belt, the final rule will require lap or lap/shoulder belts (at the manufacturer's option) at side-facing seats on all affected buses, except over-the-road buses. For over-the-road buses the final rule will require lap/shoulder belts in side-facing seats, consistent with the MAP–21 Congressional mandate, as opposed to allowing the option for lap or lap/shoulder belts.

There is not sufficient information that substantiates concerns about lap/shoulder belts on side-facing seats to a degree that would support prohibiting such belts. Yet, NHTSA acknowledges there have been concerns about the shoulder belt on side-facing seats, which we have weighed in past decisions not to require lap/shoulder belts on side-facing seats for any vehicle type of any weight.

In the 2004 Anton's Law final rule we specifically declined to require lap/shoulder belts on side-facing seats of light vehicles because we believed ''the addition of a shoulder belt at this seat position is of limited value, given the paucity of data related to side facing seats.'' [107] However, we declined to prohibit lap/shoulder belts ''because we [were] unaware of any demonstrable increase in associated risk.'' The agency's view on this matter has not changed. There is not enough information showing the effect, positive or negative, of the shoulder belt on side-facing seats.

However, although we have no direct evidence that shoulder belts may cause serious neck injuries when applied to side-facing seats, we are aware of simulation data that are indicative of potential carotid artery injury when the neck is loaded by the shoulder belt.[108] In addition, as we noted in 2004, the Australian Design Rule ADR 5/04, ''Anchorages for Seatbelts'' has specifically prohibited shoulder belts for side-facing seats since 1975.

We believe there are design considerations that could possibly mitigate a risk of neck injury. In the 2004 Anton's Law final rule we noted that a study funded by the European Commission (EC) regarding side-facing seats on minibuses and motorcoaches found that the addition of a panel directly in front of a side-facing seat would help restrain a belted occupant in a frontal crash in a manner that would prevent either spool-out from the belt or belt loading against the neck.[109] The literature review in this same report also stated that neck loading by shoulder belts in frontal crashes can be avoided by locating the shoulder belt anchorage rearward of the occupant neck. We recognize that this could limit the restraint of an occupant's upper torso, given that the shoulder belt may slip off the shoulder.[110]

Our understanding is that there would be few, if any, side-facing seats on over-the-road buses, so the real-world implications of this issue might be narrow. Given that there are unknowns about shoulder belt loading of an occupant's neck on a side-facing seat, and in view of the small number of side-facing seats on the buses in question, manufacturers of over-the-road buses seeking to install lap belts on side-facing seats may petition NHTSA for a temporary exemption from the requirement to install lap/shoulder belt at side-facing seats, under 49 CFR Part 555. The basis for the petition is that the applicant is unable to sell a bus whose overall level of safety is at least equal to that of a non-exempted vehicle.[111] The agency would be receptive to the argument that, for side-facing seats, lap belts provide an equivalent level of safety to lap/shoulder belts.

2. The issue of mandating only forward-facing seats was not a part of the NPRM. In the NPRM, we indicated our awareness of other seating directions when we proposed to permit either a lap belt or lap/shoulder belt for side-facing seats. The commenters suggesting that affected vehicles be restricted to forward-facing seats did not present data showing a safety need for prohibiting seats other than forward-facing seats. While we recognize there is potential for occupant-to-occupant contact when seating configurations are intermixed, this final rule mitigates such potential contact by specifying that some type of seat belt must be provided at all passenger seating positions.

3. The NPRM preamble did not mention rear-facing seats even though we meant to apply the proposed lap/shoulder belt requirements to those seats, as shown by the proposed regulatory text that included language for rear-facing seats. We note for clarification purposes that this final rule requires lap/shoulder belts at all passenger seating positions other than side-facing seats, not just forward-facing positions.

4. BroendumSeats requested that the regulation include ''sleeper seats,'' which are seats that can be reconfigured into a couchette by the passengers to allow them to lie down while the motorcoach is moving. BroendumSeats suggested that this type of seat should meet the proposed regulations when configured as an ordinary coach seat and also be required to restrain the occupant when configured as a couchette and tested using the same forces as used for the sitting position.

In response, we cannot consider the suggestion to apply seat belt requirements to ''sleeper seats'' when configured as couchettes at this time. Such seats need to meet the requirements of the final rule when configured as ordinary coach seats. The couchette configuration was not contemplated during development of the NPRM, nor does the agency have any technical data or market volume data to assess the safety need involved or how NHTSA should address it.

XIV. Driver's Seat

In the NPRM, the agency explained that FMVSS No. 208 currently allows an option of a lap or lap/shoulder belt for the driver seating position in buses with a GVWR greater than 4,536 kg (10,000 lb). The NPRM proposed to amend FMVSS No. 208 to require lap/shoulder belts for the driver seating position in (the vehicles the NPRM proposed to define as) motorcoaches (generally buses with a GVWR greater than 11,793 kg (26,000 lb) except transit and school buses) and in ''large'' (GVWR over 4,536 kg (10,000 lb)) school buses. (''Small'' school buses (GVWR less than or equal to 4,536 kg (10,000 lb)) are already required to be equipped with lap/shoulder belts for the driver's seating position.)

The agency proposed not to require lap/shoulder belts for drivers of transit or other buses. We stated that ''[t]hese buses are driven in different environments than motorcoaches,'' and that ''Motorcoaches are often driven on highways and other high-speed roads, so the risk of injury is greater for drivers of these [motorcoach] vehicles'' as compared to other buses. The NPRM did not provide any estimate of the potential costs and benefits of a lap/shoulder belt requirement but requested comment on the issue.

[107] 59 FR 70907.

[108] Editors: Fildes, B., Diggs, K., ''Occupant Protection in Far Side Crashes,'' Monash University Accident Research Center, Report No. 294, April 2010, pg. 57.

[109] This report may be viewed at *http://ec.europa.eu/enterprise/sectors/automotive/files/projects/safety_consid_long_stg_en.pdf.*

[110] Note that our final rule does not prohibit manufacturers from installing a forward panel or a rearward anchorage location.

[111] 49 CFR part 555 limits the number of exempted vehicles sold in the U.S. in any 12-month period to 2,500 vehicles. The exemption is limited to a period of 2 years by 49 CFR 555.8(b) but applications for renewal of the exemption are automatically granted if filed within 60 days before termination of the exemption and do not terminate until the Administrator grants or denies the application for renewal. 49 CFR 555.8(e).

Comments

All 16 commenters on this issue supported the proposal.

NTSB stated that it is pleased with the proposal to require lap/shoulder belts for the driver position in motorcoaches and large school buses and that such a requirement addresses NTSB Safety Recommendation H–90–75.

The National Association of State Directors of Pupil Transportation Services (NASDPTS) expressed strong support for the lap/shoulder belt requirement for the driver position in motorcoaches and in large school buses. NASDPTS said that in response to the NPRM, it conducted an informal survey of the manufacturers of large school buses and found that currently all new large school buses are being manufactured with a lap/shoulder belt at the driver position. It stated that most states already require lap/shoulder belts at the driver position of school buses and that the School Transportation Specifications and Procedures of the National Congress on School Transportation has recommended that the states adopt this requirement since 1990. The National School Transportation Association also supported the lap/shoulder belt requirement for the driver position of large school buses.

SafetyBeltSafe, Safe Ride News, Advocates, and two seat manufacturers expressed support for the lap/shoulder belt requirement for the driver position of motorcoaches and large school buses, but recommended that it include all buses, including urban transit buses.

Agency Response

The Motorcoach Enhanced Safety Act requires over-the-road buses to have lap/shoulder belts at each designated seating position, which includes the driver position.

In satisfaction of the Act, and in accordance with the NPRM, this final rule requires a lap/shoulder belt for the driver position in over-the-road buses, and in other buses as discussed in the NPRM.

In response to commenters requesting that the requirement be expanded to include the driver position of all buses, we are not agreeing to this suggestion without providing more opportunity to the public to comment on the issue.

After the comments were received, we reanalyzed accident data for the driver's position for these other buses. First, looking at the data for drivers of buses above the 11,793 kg (26,000 lb) threshold and below that threshold, we found that drivers of buses between 4,536 kg and 11,793 kg (10,000 lb and 26,000 lb) are at slightly less risk of fatality than the drivers of motorcoaches above the 11,793 kg (26,000 lb) threshold. On an annual basis, there are 0.7 driver fatalities in the buses between 4,536 kg and 11,793 kg (10,000 lb and 26,000 lb) as compared to 4.1 in the motorcoaches above the 11,793 kg (26,000 lb). These data present that there is less of a safety need to require lap/shoulder belts for the driver positions of buses below the 11,793 kg (26,000 lb) threshold than for buses above the 11,793 kg (26,000 lb) threshold.

Second, regarding the driver's position on transit buses, 2000–2009 FARS data show that for transit buses with a GVWR of 11,793 kg (26,000 lb) or less, transit bus drivers had zero fatalities during this 10 year period. For buses with a GVWR greater than 11,793 kg (26,000 lb), the analysis showed that the number of annual driver fatalities for the category of vehicle in FARS termed transit bus body type is 1.1, as compared to 4.1 for non-transit and non-school buses. Thus, the target population for transit bus drivers is about one-quarter of that for drivers of buses covered by this final rule.

To further learn about this issue, we also conducted a cost/benefit analysis for requiring a lap/shoulder belt at the driver position of buses with a GVWR greater than 4,536 kg (10,000 lb). This analysis found that the cost per equivalent life saved for drivers in the covered buses (GVWR greater than 11,793 kg (26,000 lb)) ranged from $0.01 to $0.04 million, drivers in mid-size buses (GVWR from 4,536 to 11,793 (10,000 to 26,000 lb)) ranged from $0.04 to $3.1 million and drivers in transit buses (GVWR greater than 4,536 kg or 10,000 lb) ranged from $0.04 to $0.8 million.

The issue of requiring lap/shoulder belts at the driver position of large transit buses was not discussed in a meaningful way in the NPRM. Thus, the transit bus industry, including manufacturers, purchasers, and operators of transit buses, did not provide in-depth comment on this issue in response to the NPRM, nor have we been able to benefit from reading comments on the issue. In the absence of this, this final rule will not extend the lap/shoulder belt requirement beyond driver positions of the buses covered in the NPRM.

XV. Seat Belt Signage and Other Reminders

We have decided against requiring passenger seat belt use signage or auditory reminders on covered buses at this time. At this time, the agency does not know enough about the use of seat belt use signage and reminders on covered buses and does not have information on their cost and effectiveness at promoting passengers to use seat belts. In its comment, Trans-Bridge Lines said that it found that the majority of its passengers do not use belts in spite of having signage asking passengers to fasten their seat belts and having the driver instructing them to do so.

It is unclear how auditory seat belt reminders for the passengers, as suggested by some commenters, could be implemented without a sensor to determine the occupancy of the seat and switches in the belt buckles to determine their use. Such a requirement would be relatively expensive, and it does not seem like a prudent investment. Trans-Bridge Lines commented that its drivers must focus on the safe operation of the bus and cannot simultaneously enforce seat belt fastening rules.

UMA believed that FMCSA should revise their guidance for pre-trip announcements and/or instructions to include reminders and directions for passengers regarding the use of seat belts. We have informed FMCSA of UMA's comment.

XVI. Strength Requirements

NHTSA proposed that lap/shoulder belts on the covered buses be required to meet the anchorage strength requirements of FMVSS No. 210. Because the agency proposed a requirement that the passenger lap/shoulder belts must be integrated into the seat structure, the agency's view was that a seat belt anchorage strength requirement not only specifies the strength of the seat belt attachment to the vehicle seat, it also performs the vital function of ensuring the attachment of the seat to the bus. ''A seat belt anchorage strength requirement provides the foundation upon which the entire occupant protection system is built. If the anchorage fails, the belted occupant could be propelled beyond the confines of the occupant seat space, and injury or ejection could occur.'' NPRM, 75 FR at 50973.

In FMVSS No. 210, lap/shoulder belt anchorages and attachment hardware are required to withstand a 13,345 N (3,000 lb) force applied to the lap portion and a 13,345 N (3,000 lb) force simultaneously applied to the torso portion of the belt assembly, for 10 seconds.[112] Anchorages, attachment

[112] An exception for Type 2 lap belts that have detachable torso belts is not relevant here.

hardware, and attachment bolts for seats with multiple designated seating positions are tested simultaneously. The seat belt anchorage comprises any component involved in transferring seat belts loads to the vehicle structure. See S3, FMVSS No. 210. Since the seat belts will be attached to the vehicle seat on the covered buses, the seat belt anchorage includes the seat frame and seat pedestal.

In developing a performance standard for lap/shoulder belt anchorages, the agency considered several alternatives, and assessed the suitability of alternatives using seat belt anchorage test data obtained in the motorcoach crash test and sled test program. NHTSA tentatively determined that the test data best supported applying FMVSS No. 210 to the passenger seat belt anchorages on the covered buses, but we requested comments on alternatives to FMVSS No. 210, particularly ECE R.14 and ECE R.80.

ECE Regulation No. 14, ''Vehicles with Regard to Safety-Belt Anchorages, ISOFIX Anchorages Systems and ISOFIX Top Tether Anchorages,'' applies to M2 and M3 vehicles [113] and specifies a static test method to evaluate seat belt and seat anchorage strength. The ECE R.14 load does not include the load that unbelted occupants aft of the seat being evaluated (we call this the ''target seat'') may impose on the target seat. For M3 vehicles, ECE R.14 applies a load of 4,500 N to the shoulder belt and 4,500 N to the lap belt (total of 9,000 N). In addition, for M3 vehicles it also specifies an additional inertial seat load of 6.6g × the weight of the seat. For M2 seats, it specifies an addition load of 10g × the weight of the seat.[114]

ECE Regulation No. 80, ''Seats of Large Passenger Vehicles and of These Vehicles with Regard to the Strength of the Seats and Their Anchorages,'' applies to M2 and M3 vehicles. The ECE R.80 procedures evaluate the seat back's strength, energy absorption capability and impact protection for occupants in the rear seat aft of the target seat and the target seat's anchorage strength. The seat back performance is assessed with either a dynamic or a static test option. The ECE R.80 load does not include the seat belt loads from the restrained occupant in the target seat and evaluates anchorage performance in terms of the loading of the seat back from unrestrained occupants in the rearward row.

The dynamic test option of ECE R.80 loads the seat back with an unrestrained [115] 50th percentile male dummy in a 30–32 km/h (18.6–19.9 mph) delta V, 6.5–8.5 average g pulse. Performance value limits on the injury measures of the dummy are HIC = 500, chest acceleration = 30 g, femur force = 10,000 N (2,248 lb) and 8,000 N (1,798 lb) for not more than 20 milliseconds.[116] The static test option assesses seat back performance through a static force-deflection test that applies 5,000 N (1,124 lb) to the seat over a 200 millisecond time period.

The agency proposed to adopt FMVSS No. 210 after analyzing the seat belt anchorage test data obtained in the VRTC motorcoach crash test and sled test program.[117]

We studied five sled tests from the sled test program to determine the loads measured at the seat belt anchorages.[118] These five were selected because they represented demanding yet potentially common scenarios for the loads we believe will be imparted to seat belt anchorages during a motorcoach crash. We identified the loads recorded in the sled tests at the seat anchorage points in the second row target seat, the loads on the lap/shoulder belts in the target seat in which test dummies were restrained, and the loads to the seat back of the target seat from the unrestrained dummies in the third (aft) row. We then compared those loads to the loads that seat belt and seat anchorages are required to withstand under FMVSS No. 210, ECE R.14 and ECE R.80. In that way, we could determine which performance test best accounted for the loads imparted on the seat belt anchorages.

Of the five sled tests, the highest total load experienced by the seat anchorages in the forward direction was 46,570 N (10,469 lb). This load resulted from a test of a 10 g seat with two 50th percentile male test dummies restrained with lap/shoulder belts in the middle row and with two unrestrained 50th percentile male dummies in the rear (aft) row. Applying a static load of 48,569 N (10,918 lb) (or approximately 24,285 N (5,460 lb) per seating position) to the seat belt anchorages, using the loading devices and technique specified in FMVSS No. 210, reproduces the load measured at the seat anchorages in the sled test.[119]

FMVSS No. 210 appeared to best account for the loads imparted on the seat belt anchorages. The total load on the seat belt anchorages of 48,569 N (10,918 lb) (approximately 24,285 N (5,460 lb) per seating position) required to generate the same peak total load experienced in the sled test is only slightly lower than the total forces required by FMVSS No. 210 of 53,380 N (12,000 lb) (or 26,690 N (6,000 lb) per seating position). That is, the highest total peak dynamic loading recorded by the seat anchorage of the tests (48,569 N) was about 91 percent of that applied in FMVSS No. 210 (26,690 N (6,000 lb) per seat, or 53,380 N (12,000 lb) for a two-person bench seat). These data indicated that the FMVSS No. 210 load would account for seat belt loads generated by a restrained occupant, seat inertia loads, and loading from unbelted occupants in the rear.

ECE R.14 and ECE R.80 both determine seat belt and seat anchorage strength by separately considering the loading from the belted occupant in the seat and the loading due to unrestrained occupants in the rear row. We believed that the loads specified in these regulations are not sufficiently high to sustain the combined loads from the restrained occupant in the seat and rear occupant loading. In the test of the 7 g seat with restrained 50th percentile male dummies in the target seat and unrestrained 50th percentile male dummies in the rear, we estimated that the total peak load on the anchorages from the lap/shoulder belts alone for one motorcoach seating position was

[113] ECE Regulations define the M2 vehicle category as vehicles having more than eight seating positions and mass not exceeding 5 metric tons (11,023 lb). The M3 vehicle category consists of vehicles having more than eight seating positions and mass exceeding 5 metric tons (11,023 lb).

[114] Seats designed to meet ECE R.14 for M3 vehicles are referred to in this final rule document as ''7 g'' seats and seats designed for M2 vehicles are referred to as ''10 g'' seats.

[115] We note that ECE R.80 also requires testing with a restrained dummy in the rear ''auxiliary'' seat. However, this auxiliary seat need not be the same as the forward seat that is the focus of the test. If the test with the belted dummy in the rear is conducted with the manikin restrained by a lap/shoulder belt and the injury criteria are not exceeded, the auxiliary seat is considered to have met the requirements relating to the static test loads and movement of the upper anchorage of ECE R.14.

[116] These injury criteria do not match those in FMVSS No. 208 for the 50th percentile male test dummy, except for the upper limit on femur force. The chest acceleration limit in FMVSS No. 208 is 60 gs. FMVSS No. 208 specifies a HIC15 limit of 700. The HIC limit in ECE R.80 does not appear to have a time limit.

[117] NHTSA found that the over-the-road bus in the 48 km/h (30 mph) rigid barrier crash test experienced only a 13*g* peak deceleration (crash pulse). Data from our frontal sled test program enabled us to analyze the magnitude of the forces that are exerted on the seat anchorages in a 13g crash.

[118] For a description of the five sled tests, see 75 FR 50973, col. 2.

[119] This relationship was determined by testing a seat to failure using the loading device specified in FMVSS No. 210 and measuring the load applied through the seat belt anchorages and the load experienced at the seat anchorages (in the x-direction). This method was referred to as ''Method B'' in the NPRM and in research report DOT HS 811 335, NHTSA's Motorcoach Safety Research Crash, Sled, and Static Tests, dated May 2010.

11,400 N (2,563 lb) and that from rear occupant loading was 8,150 N (1,832 lb). The contribution of anchorage loads in this sled test from the seat belt loading alone was greater than the 9,000 N (2,023 lb) applied by ECE R.14 and the loading from rear occupant loading was greater than the 5,000 N (1,124 lb) applied by ECE R.80. We believed that a seat manufactured to meet FMVSS No. 210 would better be able to withstand this tri-loading on the seat in a severe yet not uncommon bus crash, than a seat that was not manufactured to account for the rearward loading.

In the NPRM, the agency explained that it has tentatively determined that there were no adverse consequences associated with applying FMVSS No. 210 to the seat belt anchorages of the affected vehicles rather than ECE R.14 (75 FR at 50974). There did not appear to be adverse consequences to meeting FMVSS No. 210 in terms of weight, comfort, or cost, because data from our testing program indicated that the Amaya 7 g seats we acquired to evaluate in our testing program appeared to have been already made to meet the more stringent requirements of FMVSS No. 210. In April 2009, VRTC tested existing Amaya lap/shoulder belt seat designs to evaluate FMVSS No. 210 performance. The agency sought to understand the extent to which changes will be needed to existing 7 g and 10 g seat and seat anchorage designs in order to meet the performance requirements in FMVSS No. 210. Two static tests were performed on the seats using a test fixture and the FMVSS No. 210 test method.[120] Both the 7 g and 10 g seats were able to meet the FMVSS No. 210 performance requirements, which NHTSA believed showed not only the practicability of the proposed FMVSS No. 210 requirements with current designs, but also that meeting FMVSS No. 210 was not likely to adversely affect the weight or comfort of current ''7 g'' seats.

Although we preferred FMVSS No. 210 to ECE R.14 and ECE R.80, the NPRM asked for information that could help the agency make a fuller incremental assessment of each alternative's costs and benefits.

Comments

There were 16 comments on the proposal to apply FMVSS No. 210 to all seating positions in the affected vehicles. Many commenters supported applying FMVSS No. 210, while several others supported the ECE regulations. Two commenters suggested alternative requirements. Many commenters recommended that NHTSA adopt requirements regulating seat back impact and/or energy absorption.

Generally, the seat manufacturers commenting on this issue (C.E. White, Freedman, IMMI, and American Seating) supported applying FMVSS No. 210 as proposed. C.E. White stated that ''not only the forward forces applied to the lap/shoulder belts, representative of the restrain[ed] occupants in the test seat, [should] be taken into consideration but also the forces applied by the knee/femur and head/upper torso of the unrestrained occupants in the seat behind the test seat [should] be taken into consideration.'' Freedman agreed with the agency's conclusion that FMVSS No. 210 should be extended to all seating positions in the affected vehicles and stated that the U.S. bus industry is already familiar with FMVSS No. 210 requirements and will therefore be able to move forward into the testing process very quickly.

IMMI expressed its support of the agency's proposal to extend the FMVSS No. 210 requirements to all seating positions. It believed that FMVSS No. 210 is a better choice than either ECE R.14 or ECE R.80 since it is a more realistic representation of the types of crash forces that may be experienced in real-world crashes, and reflects the total forces that may be experienced by the seat anchorage from both restrained and unrestrained occupants. IMMI said that compliance with FMVSS No. 210 is already achievable and is currently available in motorcoach seating. IMMI stated that, at the time of submission of its comments to the NPRM, at least three manufacturers of covered buses offer IMMI's Premier® FMVSS No. 210 compliant seats in their vehicles. IMMI also stated that it helped these manufacturers develop the necessary floor and wall structure to meet the performance standard.

IMMI also stated that it performed sled tests of its own seats and found that the data produced were consistent with the agency's findings. In addition, IMMI said the results of analytical simulations of severe case loading were also similar to the agency's data. (These data are discussed below.) AORC agreed with the agency's proposal to apply the FMVSS No. 210 anchorage load requirement.

Five bus manufacturers (Setra, Prevost, IC Bus, MCI, and Van Hool) and ABC Companies, a distributor of Van Hool's buses, commented on the proposal to apply the FMVSS No. 210 anchorage load requirements to all seating positions in covered buses. These commenters were divided in their views.

Setra, a European bus manufacturer, preferred the ECE regulations, stating that the ECE regulations have been successfully used in Europe. Setra stated that VRTC's testing might not represent realistic situations, and that seats meeting FMVSS No. 210 may lead to higher injuries than a seat meeting the ECE ''impact requirements.''

Prevost requested that NHTSA consider the M2 requirements of ECE R.14, which it stated is based on a ''closer and more realistic deceleration pulse'' than the proposed FMVSS No. 210 requirements. Prevost stated that the load from an unbelted occupant behind the seat as well as the weight of the seat should be included in the forces applied to the seat, but ''the deceleration pulse must be diligently specified since it has a very significant multiplying effect.'' Prevost also recommended that the requirements be reduced for seats where there is no possibility of an unbelted passenger being seated behind it.

IC Bus agreed with the agency's conclusion that FMVSS No. 210 should be extended to all seating positions in covered buses. IC Bus noted that when it builds a commercial bus that specifies seat belts, it is built to meet the applicable requirements of FMVSS No. 210.

MCI disagreed with the proposal to apply FMVSS No. 210 to all seating positions, believing that NHTSA has not tested a sufficiently broad spectrum of seating configurations. The commenter suggested that the agency duplicate the same or similar test conditions with emphasis on protecting women and children. The commenter submitted confidential test data from sled tests it conducted, and recommended a form of static testing on a bus frame using a unique loading profile that combined aspects of ECE R.14 (10 g; M2 vehicles) and FMVSS No. 210.

Van Hool, a European bus manufacturer, supported adopting ECE R.14 and ECE R.80. Van Hool stated that a ''true European seat'' cannot fulfill the FMVSS No. 210 requirements as proposed in the NPRM because the loads are three times that required by ECE R.14 and the strength of the seat is limited by the energy-absorbing

[120] An additional test was conducted on a 10 g seat because an initial FMVSS No. 210 test was conducted on a 10 g seat using the same seat mounting rails used during the 7 g seat test. During this 10 g seat test, the seat failed to meet the FMVSS No. 210 loads. However, we determined that this test should be deemed invalid because the seat rails were reused. It was unknown to what extent the rails were damaged during the previous test, thus affecting the results of the subsequent test. The rails were replaced on the test fixture and a second test using a 10 g rated seat was performed successfully.

capabilities required by ECE R.80 for unbelted passengers striking the seat from behind. In its submission, Van Hool questioned whether the Amaya seats that were used in the NHTSA VRTC tests, which according to Amaya met the ECE R.14 requirements for M3 and M2 vehicles, were also approved to ECE R.80 since this was not mentioned in the NPRM. Van Hool also asked why the NPRM did not consider a proposal for adding a 10 g standard for large buses into FVMSS No. 207, ''Seating systems.'' [121]

ABC Companies supported an approach that allows compliance with either the U.S. standards or preexisting European standards, to facilitate harmonization of standards.

Transportation providers Greyhound, Coach USA, UMA and American Bus Association (ABA) were divided in their support of the proposed application of FMVSS No. 210 anchorage load requirements.

Greyhound strongly supported the agency's proposal to apply the FMVSS No. 210 requirements to the passenger seat anchorages. Greyhound stated that the 10 percent strength margin that the FMVSS No. 210 loads provided is prudent since ''higher speeds and larger passengers than those [reflected in the VRTC tests] will sometimes be involved in real world crashes.'' Greyhound stated that it sees no basis for allowing the European standards as an alternative to FMVSS No. 210. It commented that FMVSS No. 210 is ''clearly the more appropriate standard'' when compared to ECE R.14 and ECE R.80 because FMVSS No. 210 accounts for the load of both the belted passenger in the seat and an unrestrained passenger in the seat behind, whereas the European standards do not. Greyhound stated that it has been installing IMMI Safeguard Premier seats, which meet FMVSS No. 210 and other FMVSSs, in all of its new buses since 2008.

UMA supported the FMVSS No. 210 requirements. UMA stated that it reviewed the data provided by NHTSA in the NPRM and concluded that seat belt assembly anchorages that meet FMVSS No. 210 will perform in a manner that offers occupants the highest known protection in ''real-life'' crash and rollover occurrences.

ABA favored allowing motorcoach manufacturers to certify their vehicles to either the FMVSS requirements proposed in the NPRM or, at the manufacturer's option, to ECE R.14 and ECE R.80. ABA stated that the agency's proposed performance requirements accurately represent the agency's results of its motorcoach crash and sled testing and subjecting passenger seating to FMVSS No. 210 reasonably matches the forces and loads in NHTSA's test results. However, ABA also suggested that in light of what the commenter believed would be the panoply of new regulations that may be adopted, the considerable costs involved, the relatively small volume of new covered buses sold each year and the global nature of the industry, compliance options permitting harmonization will enhance flexibility, reduce costs and promote the overall turnover of the fleet towards newer vehicles.

Coach USA also supported the approach of allowing manufacturers to comply with either FMVSS No. 210 or ECE R.14 and ECE R.80. The commenter stated that its parent company, Stagecoach Group, headquartered in Scotland, operates approximately 780 motorcoaches in Europe that are equipped with seat belts that meet the EU standards, and the belts ''have not proven to pose a safety issue over a period of several years.'' The commenter believed that ECE R.14 ''is sufficient to accomplish NHTSA's primary goal in this rulemaking, namely, ejection prevention in rollovers.'' Coach USA stated that NHTSA did not suggest that seat belts designed to meet FMVSS No. 210 are necessary to achieve this level of effectiveness in rollover crashes. The commenter believed that frontal crashes resulting in forces on the seat back exceeding those of ECE R.14 are ''rare.'' Coach USA believed that FMVSS No. 210 will provide little, if any, benefit in frontal crashes beyond the benefits produced by ECE R.14.

Coach USA commented that a combination of ECE R.14 and ECE R.80 is likely to provide some safety benefits compared to FMVSS No. 210 by protecting unbelted passengers. It stated that, to the extent that FMVSS No. 210 provides some benefit relative to the European standard in severe frontal crashes, this benefit is offset in other areas and, as a result, the two ECE standards would appear to provide an approximately comparable level of safety when all relevant factors are taken into account.

Coach USA submitted a separate report to the agency which detailed a sled test study that it conducted on Van Hool motorcoach seats, which they stated comply with ECE R.14 (for M3 vehicles) and ECE R.80. Coach USA conducted sled testing and FMVSS No. 210 static testing on Van Hool motorcoach seats installed on a test ''buck'' representing the interior of a motorcoach. In the tests, three rows of seats were mounted on the test buck. The first row (front row) was unoccupied, the second was occupied with Hybrid III 50th percentile adult male test dummies that were restrained with lap/shoulder belts, and the third row was occupied with two unrestrained 50th percentile adult male Hybrid III test dummies. Coach USA stated that the restrained dummies in the second row remained restrained and the seat remained attached to the replicated bus, and the commenter said, provided protection for the belted occupants.

Subsequently, Coach USA conducted an FMVSS No. 210 test on a new Van Hool seat, and the seat failed to meet the standard's strength requirements. Coach USA concluded that FMVSS No. 210 is ''not a necessary requirement for safety. . . . [A] motor coach seat that is able to comply with ECE R.80 dynamic test or its dynamic equivalent such as FMVSS [No.] 208 would assure more protection than a seat that is able to meet FMVSS [No.] 210 requirements.''

Agency Response

In accordance with the Vehicle Safety Act and the Motorcoach Enhanced Safety Act, after considering all relevant, available safety information, we have determined that the FMVSS No. 210 requirements are reasonable, practicable, and appropriate for the seat belt anchorages on buses affected by this final rule (buses with a GVWR greater than 11,793 kg (26,000 lb)). Our reasons for adopting the FMVSS No. 210 requirements, set forth in the NPRM (75 FR at 50973–50975), were supported and bolstered by diverse commenters. The information provided by all the commenters enhanced our knowledge of the subject matter. The requirements we have adopted take into account the impact to seating capacity of changes to size and weight of motorcoaches and the ability to comply with State and Federal size and weight requirements, as required by section 32703(e), ''Application of Regulations,'' of the Motorcoach Enhanced Safety Act, and are based on the best available science, as mandated by section 32703(e) of the Act.

Safety Need

There is a safety need to apply FMVSS No. 210 to the passenger seat belt anchorages of the affected buses. NHTSA has decided not to accept the European requirements because ECE R.14 and ECE R.80 do not consider the totality of loads resulting from (a) belted occupants, (b) unbelted occupants aft of

[121] By this we believe Van Hool meant applying half the forces specified by FMVSS No. 210 to the seat belt anchorages and an inertial load to the seat, assuming a 10 g deceleration instead of the 20 g specified in FMVSS No. 207.

the belted occupant, and (c) the inertia load of the seat, i.e., the ''tri-loading'' from the three in a motorcoach crash. We believe FMVSS No. 210 is needed to ensure the belt anchorages can protect the belted occupant. The static load requirements specified in ECE R.14 (for M2 and M3 vehicles) and ECE R.80 are far below that needed to generate the peak seat anchorage loads that NHTSA measured in its sled tests, which means a seat that minimally meets the ECE required static loads for M3 vehicles may separate from its floor anchorages in a crash of the severity represented by the 48 km/h (30 mph) frontal barrier impact performed by NHTSA.

In its comment supporting the application of FMVSS No. 210, IMMI stated that it performed tests on its own seats after the NPRM and found that the sled test data were consistent with the agency's data provided in the NPRM. IMMI stated that its test data supported the agency's view that FMVSS No. 210 is a more realistic representation of the crash forces that may be experienced in real-world crashes than those of ECE R.14 and ECE R.80. The commenter reported that in over 20 sled tests using 50th and 95th percentile test dummies, IMMI found an average total x-direction (fore-aft) component force of 51,983 N (11,686 lb) for its 2-occupant seat, which it stated was ''near the FMVSS [No.] 210 specified requirement of 26,688 N per position or 53,376 N per 2-occupant seat.'' [122] The close similarity between IMMI's sled tests and NHTSA's sled tests reinforces the conclusion that the FMVSS No. 210 requirements are reasonable and appropriate for the seats on the affected buses.

Other safety information from IMMI also supports the validity of the agency's data. In its comment, IMMI said that it performed two analytical simulations, one with two unrestrained 50th percentile males seated behind two restrained 50th percentile males and another with two unrestrained 95th percentile males seated behind two restrained 50th percentile males, which resulted in total x-direction component forces of 56,196 N (12,633 lb) and 57,451 N (12,916 lb), respectively. The peak total loads in both of IMMI's simulations are also slightly above the loads which may be experienced in an FMVSS No. 210 test, the largest being 8 percent [57,451 N/53,177 N] above the largest x-direction component expected in an FMVSS No. 210 test. In addition, the IMMI simulations indicated that sustained loads of 40,000 N (8,992 lb) to 50,000 N (11,240) for approximately 100 milliseconds following the peak loads are possible in real-world crashes, which are only slightly below the loads applied in an FMVSS No. 210 test.

Reasonable and Appropriate

As noted above, Coach USA supported the approach of allowing manufacturers to comply with either FMVSS No. 210 or ECE R.14 and ECE R.80. Coach USA states that FMVSS No. 210 will provide little, if any, benefit in frontal crashes beyond the benefits produced by ECE R.14. Coach USA said that only 0.16 fatalities from high speed frontal crashes into rigid roadside objects would be prevented annually by the rule, assuming a 15 percent seat belt use rate. It stated that, even if seat belts are used in motorcoaches at the same rate they are used in passenger vehicles (83 percent), the expected number of fatalities prevented per year for this kind of crash is still less than one. It also argued that these estimates do not take into account that some of the crashes in which the most harmful event was listed as ''Roadside'' were not the type of crash simulated by NHTSA (involving direct frontal impact into a rigid object at 48 km/h (30 mph)). Thus, Coach USA suggested NHTSA overestimated the estimated number of fatalities the rule will prevent annually.

In response, accident data show that it is reasonable to base a standard on data from a 48 km/h (30 mph) barrier test, i.e., that it is reasonable to assume that the test is representative of a realistic, severe crash condition. As discussed earlier in this preamble, FARS data show that frontal impacts represent a substantial amount (41.6 percent [87/209]) of the fatalities in buses affected by this final rule. Moreover, the covered buses can travel on high speed roads where the risk of a high speed impact is foreseeable. The NTSB has investigated a number of high speed frontal crashes that likely underwent a velocity change (delta-V) comparable to or exceeding the crash test performed by NHTSA, as illustrated in Table 6.[123]

TABLE 6—EXAMPLES OF FRONTAL MOTORCOACH CRASHES INVESTIGATED BY THE NTSB INVOLVING IMPACT VELOCITIES WELL IN EXCESS OF THE NHTSA 48 KM/H (30 MPH) BARRIER CRASH TEST

Incident	Total occupants	Injury severity †				Approximate impact velocity
		Fatal	Serious	Minor	None	
Osseo 2005	45	5 (inc. driver)	5	30	5	102–126 km/h. (64–78 mph).
Tallulah 2003	15	8	7 (inc. driver) ‡.	0	0	97–105 km/h. (60–65 mph).
Loraine 2002	38	3	6 (inc. driver)	24	5	77–89 km/h. (48–55 mph).
New Orleans 1999	44	22	16	6	0	93 km/h. (58 mph).
Burnt Cabins 1998	23	7 (inc. driver)	1	15	0	97–105 km/h. (60 to 65 mph).

† Title 49 Code of Federal Regulations (CFR) 830.2 defines fatal injury as ''any injury which results in death within 30 days of the accident'' and serious injury as ''any injury which: (1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burn affecting more than 5 percent of the body surface.''

[122] NHTSA notes that the FMVSS No. 210 load is required to be applied at an initial angle of 5 to 15 degrees above the horizontal resulting in an x-direction component force that is lower than 53,380 N; therefore, it is more accurate to compare IMMI's forces to the x-direction component of the applied FMVSS No. 210 load, which is from 51,561 N to 53,177 N for a 2-occupant seat. This indicates that the average total loads that IMMI recorded in its sled tests were within the load range that may be experienced in an FMVSS No. 210 test; their maximum loads were only slightly above those of FMVSS No. 210. [Footnote not in quoted text.]

[123] We note that the investigation of these crashes provided crash speed, which is not directly comparable to the barrier impact speed in the 48 km/h (30 mph) NHTSA crash test. However, these impact speeds ranged from double to 2½ times the barrier crash speed. Depending on the object struck, this suggests a crash severity (as represented by a velocity change (delta-V)) similar to or greater than the barrier impact.

‡ One of the seriously injured passengers died due to accident injuries 35 days after the accident. Only fatalities resulting within 30 days of the accident are included as fatal injuries in the NTSB reports.

Frontal crashes of the subject buses can be just as devastating as rollovers, as shown by the 1999 New Orleans crash that took the lives of 22 people on the bus.[124] Our updated field data show that frontal impacts represent a substantial amount (41.6 percent [87/209]) of the fatalities. Therefore, while our primary focus in this rulemaking was on ejection mitigation in rollovers, our initiative, consistent with NHTSA and the Department's focus on increasing overall safety in these vehicles, was also focused on frontal [125] and other planar crashes. We believe it would be a short-sighted public policy to define the requisite level of performance of the seat belt anchorages considering only rollovers when the affected buses are involved in other severe crashes as well. Requiring anchorage strength that addresses a safety need for frontal crashes will not degrade the performance of these restraints in rollovers. Requiring anchorage strength that addresses only rollovers could degrade the performance of the belts in severe frontal crashes.

NHTSA's frontal passenger crash protection requirements are developed to address foreseeable crashes of different severities, up to and including severe crashes. FMVSS No. 208 specifies a 56 km/h (35 mph) rigid barrier belted test for passenger-carrying vehicles with GVWRs of 3,856 kg (8,500 lb) or less. FMVSS No. 208 and FMVSS No. 210 ensure, to the degree practicable, that at least a minimum level of crash protection will be provided to the occupants of passenger-carrying vehicles in the event the vehicles crash at the higher speeds at which they are driven. This final rule extends this principle to buses with a GVWR greater than 11,793 kg (26,000 lb).

The operation of the affected buses at high speeds can be observed on roadways every day, and crash data files show the repeated involvement of the affected buses in high speed crashes. The risk of injury in a high speed crash is high. NHTSA has determined it is important to ensure that the seat and lap/shoulder seat belt system on the affected buses will withstand the crash energy that was measured in the 48 km/h (30 mph) frontal barrier test. It is important that the seat-to-floor attachments have the ability to withstand the forces resulting from tri-loading of the bus seat (the total load on the subject seat from restrained occupants in the seat, unrestrained occupants rearward of the seat, and the inertia of the seat itself) and that the lap/shoulder belt system will not fail to restrain the occupant when subjected to the load from the restrained occupant and the unrestrained occupant aft of the seat. The static load requirements of ECE R.14 for M2 and M3 vehicles are both well below the level needed to produce the anchorage loads measured in the agency's sled tests. Even if the ECE R.14 static loads are applied simultaneously with the ECE R.80 static loads, which is not required by the ECE regulations, the total load still falls below that measured by the agency.[126]

The FMVSS No. 210 loads also have a margin of safety that ensure the integrity of the seat and lap/shoulder belt anchorages at higher speeds than that replicated by the VRTC test and with occupants of larger mass than the test dummies used in the agency's tests. In its comment in support of the proposal, transportation provider Greyhound believed that the 10 percent strength margin that the FMVSS No. 210 loads provided is prudent since ''higher speeds and larger passengers than those [reflected in the VRTC tests] will sometimes be involved in real world crashes.'' The operator has first-hand knowledge of the operating conditions and the wide range in the weights of passengers using the affected vehicles.

Coach USA estimated that requiring motorcoach passenger seats to meet FMVSS No. 210 will only reduce fatalities in frontal crashes by 0.16 per year assuming seat belt usage of 15 percent and that it would still be less than one fatality per year if seat belt usage is the same as in passenger vehicles (83 percent). It stated that the success of the ECE R.14/ECE R.80 over the past decade in Europe suggests that the European standards are effective in the overwhelming majority of crashes. For these reasons, Coach USA stated that FMVSS No. 210 will provide little, if any, benefit in ''rare'' frontal crashes in terms of reducing fatalities relative to ECE R.14.

We have previously explained our reasons not to accept ECE R.14 and ECE R.80 and our basis for concluding that FMVSS No. 210 is appropriate for the vehicles covered by this final rule. We note here that it is correct that fatalities in the affected vehicles are relatively ''rare'' in comparison to the injuries and deaths in light vehicle crashes. Even with this rarity, we have assessed the benefits and costs of this rule and have found the rule to be cost effective at an assumed lap/shoulder belt use of 4 to 5 percent.

Prevost requested that NHTSA consider the M2 requirements of ECE R.14, which it believed is based on a ''closer and more realistic deceleration pulse'' than the proposed FMVSS No. 210 requirements. Prevost believed that the load from an unbelted occupant behind the seat as well as the weight of the seat should be included in the forces applied to the seat, but did not believe that there was a correlation between the peak load obtained with a 13 g sled test and the loads required in FMVSS No. 210.

Prevost did not explain in its comment why it suggested there is not a correlation between the peak loads obtained in the VRTC testing and the loads required in FMVSS No. 210. In contrast, the best available data show there is a correlation. The agency's sled tests, which used a pulse modeled after the crash pulse from an actual crash of an over-the-road bus, demonstrated that the total loads at the seat-to-floor attachment for motorcoach seats with integrated lap/shoulder belts reached levels that are very close to those generated by the current FMVSS No. 210 requirements.

Further, the best available data do not support a finding that the ECE R.14 for M2 buses uses a ''closer and more realistic deceleration pulse.'' The ECE R.80 pulse bears very little resemblance to an actual crash pulse of the affected vehicles due to the lower energy, faster ramp-up, shorter duration, and potentially higher peak of the ECE pulse, compared to the 13 g pulse obtained from the actual crash of an over-the-road bus. The unrepresentative ECE R.80 crash pulse may yield dummy injury values that are not realistic. When the agency subjected the same seat and dummy configurations to both the ECE R.80 pulse and the pulse obtained by VRTC from an actual motorcoach crash, differences in the injury values, especially with respect to the head, and to a lesser extent the femurs, were observed. The injury values were generally higher with the

[124] In March 2012, a frontal crash of a tour bus on a highway near Sierre, Switzerland, took the lives of 28 people, 22 of whom were children. *http://apnews.excite.com/article/20120314/D9TG77QO0.html*.

[125] This was shown by our proposal to require lap/shoulder belts for occupants and not just lap belts alone, based on the data from the VRTC frontal crash testing of the motorcoach.

[126] Seat back impact and energy absorption are discussed later below.

ECE pulse, and lap/shoulder belted dummies exceeded the HIC IARV in several tests.[127] The higher injury values were likely a result of the faster ramp-up of the ECE pulse, which created a higher closing velocity between the dummy and the seat back ahead of it in spite of the dummies carrying less total energy as compared to the VRTC pulse.

We are unable to agree to Prevost's suggestion that the strength requirements be adjusted (reduced) for seats where there are no other seats behind it (and therefore no unbelted passengers seated behind it). We are aware that some operators of covered buses have changed the passenger seating configuration from that set by the factory or have removed and reinstalled seats. If ''weaker'' seats are moved after the factory installation to a position that had a passenger seat behind it, the weaker seat would not provide the performance required by FMVSS No. 210. Furthermore, this final rule provides some of the flexibility Prevost seeks. Under this final rule, seats with no other seats behind them are not required to have the lap/shoulder belt anchorages attached to the seat structure. For these seats, the lap/shoulder belt anchorages can be attached directly to the vehicle structure.

European bus manufacturer Van Hool supported adopting ECE R.14 and ECE R.80. Van Hool stated that a ''true European seat'' cannot fulfill the FMVSS No. 210 requirements because the loads are three times that required by ECE R.14, and because the strength of the seat is limited by the energy-absorbing capabilities required by ECE R.80 for unbelted passengers striking the seat from behind. Van Hool believed that the Amaya seats tested by NHTSA in our research program were seats made in Mexico for the American market and were not true European seats.

In response, all information available to NHTSA indicate that European seats can meet FMVSS No. 210 and ECE R.14 and ECE R.80. The available information show that the Amaya seats tested at VRTC, which passed FMVSS No. 210, were designed to meet both ECE R.14 and ECE R.80. Our knowledge of the seats meeting ECE R.14 and ECE R.80 is based on information provided by Amaya.

Van Hool was not clear in what it meant by its claim that a ''true European seat'' cannot meet FMVSS No. 210. It is true that the static load requirements for ECE R.14 and ECE R.80 are far below that required to generate the peak seat anchorage loads that NHTSA measured in its sled tests. Thus, if Van Hool meant that a seat that minimally meets the ECE required static loads for M3 vehicles would not meet FMVSS No. 210, that may be correct. However, such a seat may separate from its floor anchorages in a crash, especially in a severe frontal crash at seats where tri-loading occurs, which NHTSA deems unacceptable.

If Van Hool meant that a seat that meets ECE R.14 and R.80 is technically unable to meet FMVSS No. 210, we do not agree. The technical information from our research program shows that meeting FMVSS No. 210 and ECE R.14 and R.80 are not mutually exclusive. It is technically possible for a manufacturer to design a seat that withstands the loads required by FMVSS No. 210 and that deflects upon forces applied from the rear. This is because FMVSS No. 210 requires the seat belt anchorages to ''withstand'' the loads applied to them; there is no limit on or specification for how the seat back may displace except in the absolute, gross sense: The seat back (with integrated shoulder belt anchorages) cannot fail to withstand the applied forces, e.g., the seat cannot break apart, or the seat's pedestal cannot pull from the floor of the bus. Meeting FMVSS No. 210 does not entail designing the seat back to be a ''stone wall,'' as Van Hool worded it. The seat back has to be strong enough to withstand the FMVSS No. 210 forces, but there is no impediment in the standard that prevents a manufacturer from designing the seat back to withstand the requisite loads of FMVSS No. 210 while deflecting in a controlled manner to absorb forces applied from the rear.[128]

The ability of the seat back to absorb the loading from the rear seat passenger is an aspect of performance not regulated by FMVSS No. 210. Manufacturers have the ability, the leeway, and, we maintain, the responsibility to design energy-absorbing seat backs to account for the loading from an occupant aft of the seat, if they believe energy absorption is an appropriate aspect of performance to address. This final rule provides the opportunity and flexibility to manufacturers to develop innovative seat back designs.

Van Hool asked why the NPRM did not consider a proposal for adding a 10 g standard for large buses into FVMSS No. 207,[129] as it claims was done in ECE R.14. The commenter provided the table below (shown as Table 7) of how such a standard could have been proposed and how it would compare to FMVSS No. 210.

TABLE 7—VAN HOOL'S EXAMPLE OF AN ALTERNATIVE ''10 G'' STANDARD

	FMVSS No. 210 as by NPRM	Alternative standard at 10 g (for a single seat of 22.5 kg)
Upper anchorages	13,345 N (3,000 lb)	6,818 N (1,533 lb).
Lower anchorages	13,345 N (3,000 lb)	6,818 N (1,533 lb).
Seat Mass inertia	0	2,250 N (506 lb).
Unbelted passenger	0	6,800 N (1,529 lb).
Total forces	26,690 N (6,000 lb)	22,686 N (5,101 lb).
Total moments	16,014 Nm (11,811 lb-ft)	13,954 Nm (10,292 lb).

In response, we did not develop such a standard. This is because NHTSA determined the appropriate loads by first measuring the seat anchorage loads in a dynamic sled test using the VRTC pulse, and then applying static loads to

[127] See tables A.2 and A.6, test types 1 though 5, 7G seats subjected to the VRTC and EU pulses in research report DOT HS 811 335, NHTSA's Motorcoach Safety Research Crash, Sled, and Static Tests, dated May 2010.

[128] Moreover, even if ECE R.80 cannot be met by a seat meeting FMVSS No. 210, that issue is not determinative as to whether FMVSS No. 210 should be adopted. NHTSA has not decided whether ECE R.80 best addresses seat deformation characteristics. Several seat manufacturers have suggested that the seat deflection requirements of FMVSS No. 222, ''School bus passenger seating and crash protection,'' should be applied to seats on the buses covered by this final rule, and have reported that their seats meet both FMVSS No. 210 and FMVSS No. 222's seat deflection requirements. This is discussed in a later section of today's preamble.

[129] By this we believe Van Hool meant applying half the forces specified by FMVSS No. 210 to the seat belt anchorages and a inertial load to the seat assuming a 10 g deceleration instead of the 20 g specified in FMVSS No. 207.

another seat, using various methods, until the loads measure in the sled test could be recreated.[130] The example ''10 g'' loads Van Hool presented still appear to be below the force levels necessary to generate the same peak seat anchorage loads that were measured in the VRTC sled test. On the other hand, the FMVSS No. 210 loading is only 15 percent [16,014 N/13,954 N] greater than the loading that Van Hool suggested. As such, the FMVSS No. 210 loading provides a slight factor of safety over the Van Hool approach. We note that the Van Hool approach is a function of seat mass. If a greater seat mass were assumed, the difference between the FMVSS No. 210 loading and the Van Hool approach would decrease further.

MCI disagreed with the proposal to apply FMVSS No. 210 to all seating positions, believing that NHTSA has not tested a sufficiently broad spectrum of seat configurations. The commenter suggested that the agency duplicate the same or similar test conditions with emphasis on protecting women and children. The commenter submitted confidential test data from sled tests it conducted using a representative motorcoach frame (test buck) and a variety of dummy, seat, restraint, seat spacing (pitch) and acceleration pulse combinations, and recommended a form of static testing on a bus frame using a unique loading profile that combined aspects of ECE R.14 (10 g; M2 vehicles), ECE R.80, and FMVSS No. 210.

We do not agree that MCI's suggested test is preferable to FMVSS No. 210. The tests that MCI used to draw its conclusions appear to have used the ECE R.80 or a similar pulse, which does not sufficiently represent a real-world crash pulse of the affected vehicles (for the reasons previously stated in this section in response to Prevost). In addition, we believe that the injury values MCI recorded were generally higher than the values recorded by the agency in the VRTC sled tests, especially for the smaller unrestrained occupants, due to the greater seat pitch (seat spacing) used in the MCI tests. This is explored further in the section below, on seat back energy absorption.

Coach USA submitted a separate report to the agency which detailed a study that it conducted on Van Hool motorcoach seats, which they stated comply with ECE R.14 (for M3 vehicles) and ECE R.80. It stated that the objective of its study was ''to evaluate the protective capability of the Van Hool motor coach seats in the severe crash environment employed by NHTSA and to determine if the seat systems (which were certified to the European standards) can meet the requirements of FMVSS 210.''

In its study, Coach USA conducted sled testing and FMVSS No. 210 static testing on Van Hool motorcoach seats that were installed on a test ''buck'' that Coach USA said was fabricated to closely represent the interior of a motorcoach. The test buck used the same aluminum seat mounting tracks and hardware as those used in a motorcoach, with the exception of the seat mounting track to floor fasteners, which were high-strength steel screws and washers as opposed to the rivets used in the actual motorcoach. The test configurations were essentially identical to those used in NHTSA's motorcoach seat sled and static tests described in the NPRM. The tests were performed at Transportation Research Center (TRC) Inc., located in East Liberty, Ohio, which is the same facility that performed NHTSA's testing.

In its sled tests, Coach USA mounted three rows of seats on the test buck at a seat pitch of 800 mm (31.5 inches). The first row (front row) was unoccupied, the second was occupied with Hybrid III 50th percentile adult male test dummies that were restrained with lap/shoulder belts, and the third row was occupied with two unrestrained 50th percentile adult male Hybrid III test dummies. Coach USA used an acceleration pulse that the commenter described as ''slightly more severe'' than the pulse used in the NHTSA test, with a delta-V just over 40 km/h (25 mph) and a peak deceleration of 9.7 g, as compared to a delta-V of 40 km/h (25 mph) and a peak deceleration of 9.5 g in the NHTSA tests.

Coach USA described the results of its sled test as follows:

> The restrained dummies in the second row remained restrained, but contacted the back of the first row of seats. The second row of seats sustained some damage from the forces resulting from the belted dummies pulling and the unbelted dummies impacting the seats from the rear. The seat backs were severely distorted, and a small section of the floor rail was pulled upward pulling free from two of the mounting screws. But the seat remained attached to the ''bus'' providing protection for the belted occupants.

Coach USA also noted that the second row slid forward about 5 inches (127 mm) in the side-wall mounting track, but it claimed this did not create any apparent deviation from expected results, based on a comparison of the left side restrained dummy injury traces with corresponding traces from the NHTSA tests. It reported the injury measures shown in Table 8 and explained that these values are well below the thresholds for frontal passenger protection in FMVSS No. 208 for the 50th percentile adult male dummy.

TABLE 8—COACH USA'S VAN HOOL SEAT STUDY SECOND ROW DUMMY INJURY MEASURES, AS REPORTED BY COACH USA

Seat position	HIC_{15}	Chest g	Chest Defl.	Nij	Femur Load (average. of right and left)
Inj. Ref. Values	700	60 g	63 mm	1.0	10,000 N
Left Seat	331 (47%)	22 g (37%)	7.4 mm (12%)	0.52 (52%)	1,930 N (19%)
Right Seat	464 (66%)	20 g (33%)	5.5 mm (4%)	0.50 (50%)	3,647 N (36%)

Coach USA noted that the injury values measured for the belted dummies in its test of the Van Hool seats are very comparable to those measured in the NHTSA sled tests for the Amaya 7 g seats. In addition, it stated that the Van Hool seat structure had no evidence of being compromised in any way as a result of the test. From these data, Coach

[130] This process was described in the NPRM (75 FR at 50958) and explained in detail in research report DOT HS 811 335, ''NHTSA's Motorcoach Safety Research Crash, Sled, and Static Tests,'' dated May 2010. The method described as ''Method B'' in the research report, which used the loading devices and technique specified in FMVSS No. 210, reproduced the anchorage loads that were measured in the VRTC sled tests when a total load equal to 91 percent of that required by FMVSS No. 210 was applied through the loading device.

USA concluded that ''it can be expected that real world injuries in motorcoaches equipped with Van Hool Seats when involved in similar crash environments would be low.''

Following the sled test, Coach USA conducted an FMVSS No. 210 test on a new Van Hool seat using the same test buck and new mounting tracks. It performed the test following the same protocol that was used in NHTSA's FMVSS No. 210 tests of motorcoach seats reported in the NPRM.[131] Coach USA reported that the Van Hool seat and seat belt anchorages withstood a total load of approximately 35,584 N (8,000 lb) applied through the seat belts before ''severe structur[al] failure began to occur.'' The test was terminated at a total applied load of 37,808 N (8,500 lb), which is short of the FMVSS No. 210 requirement of 53,380 N (12,000 lb) for a seat with two seating positions and lap/shoulder belts. The report indicated that the seat pulled completely free from the rear bracket mount to the side-wall track and the left side tubing structure of the seat was fractured in several locations.

From these tests, Coach USA concluded overall that ''a seat that is able to comply with the dynamic requirements in FMVSS [No.] 208 would be able to offer adequate protection to the occupants in motor coaches [sic] and FMVSS [No.] 210 compliance is not a necessary requirement for safety. Therefore, a motorcoach seat that is able to comply with ECE R.80 dynamic test or its dynamic equivalent such as FMVSS [No.] 208 would assure more protection than a seat that is able to meet FMVSS [No.] 210 requirements.'' It stated that it is questionable whether any benefits will be derived by requiring FMVSS No. 210 since its comparison of the Amaya and Van Hool seat tests ''clearly show that the occupant protection performance of both seats in the sled test are equivalent,'' even though the Amaya 7 g seat meets the strength requirements of FMVSS No. 210 tests while the Van Hool seat does not.

In response, we have carefully reviewed Coach USA's submission, but cannot agree with the commenter's interpretation of the test results.

Although the injury values recorded in the sled test for the restrained test dummies in the second row were within the IARVs for FMVSS No. 208, we are concerned about the reported damage to the seat anchorage tracks of the second row seat (this seat reportedly did not meet FMVSS No. 210). Coach USA reports that, although the second row seat remained attached to the ''bus,'' the row sustained ''damage from the forces resulting from the belted dummies pulling and the unbelted dummies impacting the seats from the rear. The seat backs [of the second row seat] were severely distorted, and a small section of the floor rail was pulled upward pulling free from two of the mounting screws.'' NHTSA believes that this damage, particularly at the floor rail, may be is an indication that the anchorage system was near failure. If the seats were occupied by people heavier than 50th percentile adult males, or the seat pitch (spacing) were different, or if the pulse of the crash were different, the loads carried by any one seat could be increased, with possible seat anchorage failure. We believe that the seat would have withstood the sled test forces better had it been designed to meet FMVSS No. 210. The results did not show a lack of a safety need for FMVSS No. 210.

Second, we cannot conclude that the Van Hool seats minimally met the requirements of the ECE regulations. The Coach USA FMVSS No. 210 test of the Van Hool seat found that the seat and anchorages are much stronger than the minimum necessary to meet the static load requirements of ECE R.14 for M3 or M2 vehicles. The seat withstood a load 100 percent greater than that for M3 vehicles and 33 percent greater than that for M2 vehicles. Yet, the seat anchorage was substantially damaged in the sled test, suggesting that anchorages of seats that minimally met the static load requirements of ECE R.14 for M2 or M3 vehicles may perform even more poorly in the sled test.

Third, we note that the data in Appendix B of the Coach USA report indicated that both unrestrained 50th percentile male dummies in the third row had HIC_{15} values exceeding the IARV for FMVSS No. 208 of 700. One unrestrained dummy had a HIC_{15} of 731, while the other had a HIC_{15} of 1,139. The second row seat that the dummies impacted reportedly met ECE R.80. The results bring into question whether ECE R.80 is able to provide head protection to unbelted occupants in severe frontal crashes (protection for unbelted occupants has been one of the key points voiced by several commenters that support adopting the European regulations).

Based on these observations, we do not agree that the data support a finding that FMVSS No. 210 is unnecessary.

Coach USA questioned in its report whether the NHTSA static test of the Amaya 7 g seat, which was found to withstand the FMVSS No. 210 loads, was ''precisely'' a FMVSS No. 210 test (i.e., mounted the same as in a bus).

Our answer is that an FMVSS No. 210 compliance test is performed in-vehicle, as required by FMVSS No. 210, whereas the test performed for the research program was a simulated in-vehicle test. The test is simulated for research purposes to obtain as much data as possible while conserving research monies and resources. However, the agency's research test was carefully designed to be indicative of the actual seat and anchorage performance.

Coach USA questioned whether the Amaya 7 g seat was mounted to the test fixture without a pedestal, based on Figure 62 in the NHTSA research report that was docketed with the NPRM.

Our response is yes, the seat was mounted on its pedestal and was also attached to a fixture simulating the side wall of the bus. The photograph of the seat from which Coach USA made this observation was a lateral view from the right which obscured the left side pedestal. The setup for these tests, which used actual motorcoach seat mounting rails and hardware at the seat attachment points instead of load cells, can be viewed in Figure 59 of report DOT HS 811 335, NHTSA's Motorcoach Safety Research Crash, Sled, and Static Tests, May 2010.

Several commenters requested NHTSA to allow alternative compliance with the ECE regulations. While NHTSA has the authority to consider alternative compliance with other existing standards such as ECE regulations, alternative compliance is appropriate under the Vehicle Safety Act when such a framework meets the safety need addressed by the rulemaking. Alternative compliance can be provided in such a case because the safety objectives of the rulemaking will be achieved no matter if a manufacturer selects one alternative or another. NHTSA does not have information in this situation that supports a finding that allowing the alternative of certification to both ECE regulations would meet the safety needs of this rulemaking. NHTSA conducted a preliminary comparison of the proposed FMVSS No. 210 standard with ECE R.14/ECE R.80, included on page 106 of the accompanying FRIA, which shows that the separately applied ECE regulations provide for lower seat anchorage strength than FMVSS No. 210. Specifically, NHTSA's analysis and sled and static testing indicate that ECE R.14/ECE R.80 do not provide the level of seat belt anchorage strength needed to address the foreseeable frontal crash scenario represented by a 48 km/h (30

[131] See research report DOT HS 811 335, ''NHTSA's Motorcoach Safety Research Crash, Sled, and Static Tests,'' May 2010.

mph) barrier impact, whereas the FMVSS No. 210 requirement does.

NHTSA was unable to obtain any information (either publically available, through public comments or directly from the European Union) on how the ECE R.14 and R.80 regulations were established or the rationales underlying them. Given the lack of underlying analytical and scientific information available to NHTSA, the agency is unable to conclude that the safety needs of this rulemaking would be met by allowing alternative compliance with the ECE standards. NHTSA is not able to allow alternative compliance with the ECE standards in this rulemaking in particular given Congress's direction in the Motorcoach Enhanced Safety Act to base the regulation ''on the best available science'' (MAP–21, section 32703(e)(1)(C)).

We note, however, that despite having found that FMVSS No. 210 is more effective with respect to seat anchorage strength than certification to both ECE R.14 and ECE R.80, NHTSA keeps an open mind about new developments in motor vehicle safety. In the future, the agency would be willing to consider data and other sound information, beyond that which has already been considered by the agency, from persons wishing to demonstrate that the ECE regulations are not less protective than FMVSS No. 210. In addition, NHTSA is currently planning to research motorcoach seat back performance, and depending on the results and evidence, may consider adopting some form of seat back energy absorptions in the future. At that time, we will take into consideration ECE R.80 and any other relevant information.

Practicable

The agency has concluded that meeting FMVSS No. 210 is practicable, and meeting FMVSS No. 210 with a seat that has deformation capability is also practicable. In its comment, seat manufacturer C.E. White stated that it has proven that a light weight single frame seat structure can be manufactured to meet the FMVSS No. 210,[132] and the commenter provided confidential test data for one of its seat models which supported its claim. Seat manufacturer IMMI also stated that it offers a seat with lap/shoulder seat belts that meets the requirements of FMVSS No. 210.[133] IMMI stated that at least three motorcoach manufacturers offer IMMI's Premier® FMVSS No. 210 compliant seats in their vehicles at the time of its submission of comments. Greyhound stated that it has been purchasing IMMI Safeguard Premier seats, which meet FMVSS No. 210 and other FMVSSs, in all of its new motorcoaches since January 2008. IC Bus noted that when it builds a commercial bus that specifies seat belts, it is built to meet the applicable requirements of FMVSS No. 210. This information on the development and introduction into the motorcoach fleet of seats with anchorages that meet FMVSS No. 210 clearly demonstrates that the requirement to extend the FMVSS No. 210 requirements to all seating positions in motorcoaches is practicable.

Implications of FMVSS No. 210 on Seat Weight, Cost, and Comfort

NHTSA has developed this final rule taking into account the impact to seating capacity of changes to size and weight of subject buses and the ability to comply with State and Federal size and weight requirements, in satisfaction of section 32703(e) of the Motorcoach Enhanced Safety Act. We requested comments on the benefits and costs of adopting ECE R.14 over FMVSS No. 210 and whether motorcoach seats will need to be made significantly heavier, stiffer, or less comfortable in order to meet the strength requirements of FMVSS No. 210. We stated in the NPRM that the agency did not believe there would be adverse consequences associated with applying FMVSS No. 210 to seat belt anchorages on the affected vehicles, based on data from our test program.

Comments

Eight comments specifically discussed the effects that the more stringent strength requirements of FMVSS No. 210 (compared to ECE R.14) will have on seat weight, comfort, and cost. Commenters were divided in their views of the effect that meeting FMVSS No. 210 would have on bus weight, comfort, and cost.

Seat manufacturer C.E. White commented that it has manufactured a lightweight single frame seat structure that meets the criteria of FMVSS No. 210, with energy absorption capability, and provided confidential data supporting its claim.

In response to the agency's question on whether adopting FMVSS No. 210 over ECE R.14 will increase cost and weight, seat manufacturer IMMI said that its own review determined that adopting ECE R.14 would result in only minor material reductions, resulting in minimal savings per seat assembly.

Conversely, bus manufacturer Prevost stated that introduction of lap/shoulder belts will increase the weight of an affected bus by at least 454 kg (1,000 lb). It commented that the more stringent the standard is, the heavier the vehicle is, and manufacturers cannot afford adding weight if it is not justified. Prevost stated that cargo capacity is affected by added weight, and each 79 kg (175 lb) added could potentially reduce the passenger capacity by one.

Bus manufacturer Van Hool stated that requiring buses to meet FMVSS No. 210 specifications will result in increased vehicle and seat weight, increased vehicle and seat price, increased seat size, decreased passenger comfort, and reduced passenger service. Van Hool believed that integration of the FMVSS No. 210 requirements into its vehicle platforms will force Van Hool to initiate new and different production infrastructure and methods, thus increasing manufacturing cost, in addition to the added structural material that would need to be used in the process. The commenter stated that these factors would raise the price of vehicles, and the additional structural material would result in additional deadweight of the coach as a whole, even without seats.

On the other hand, transportation provider Greyhound stated that its real-life experience has demonstrated that there are no adverse consequences to meeting FMVSS No. 210 related to weight, comfort, or cost. Greyhound made the following statement concerning the Safeguard Premier seat manufactured by IMMI, which Greyhound said it has been ordering in its new motorcoaches since 2008:

> These seats and their seat belt assemblies and anchorages comply with FMVSS standards 208, 209, 210, 213, 225, and 302. The SafeGuard Premier also complies with the forward and rearward seat back energy curves defined in FMVSS [No.] 222. The installation of these seats has not caused Greyhound to reduce the number of passengers it can accommodate. The seats are quite comfortable, do not weigh appreciably more than seats equipped with belts meeting the European standard, and are competitively priced.

Transportation provider Coach USA commented that FMVSS No. 210 will result in passenger seats that are larger/bulkier, more rigid/stiffer, less comfortable, and more expensive than those that meet the European standards and that FMVSS No. 210 will increase the overall weight of the affected vehicles. It also stated the larger FMVSS No. 210 compliant seats will require carriers to remove four seats (one row) from their buses, reducing seating

[132] C.E. White also stated that the bus seat can meet the seat back deflection and quasi-static requirements of FMVSS No. 222.

[133] IMMI stated that the seat also meets FMVSS No. 222.

capacity and increasing the cost of operations. Coach USA claims decreased seat comfort along with the increased seat cost and decreased capacity, which will be passed on as cost to the customer, may increase the number of individuals that choose ''the more dangerous option'' of travel by passenger car over motorcoach travel.

In a supplemental comment, Coach USA provided estimates of the cost and weight penalties of compliance with FMVSS No. 210 as compared to compliance with ECE R.14/ECE R.80. It compared seats offered by IMMI, which Coach USA said were the only FMVSS No. 210 compliant seats on the market at the time of its analysis, to Van Hool seats meeting the European regulations.[134] Coach USA determined that the total weight of the IMMI seats required to outfit a single deck motorcoach is 1,615 kg (3,560 lb) at a total cost of $37,800, whereas the total weight of the Van Hool seats required to outfit the same bus is 1,196 kg (2,637 lb) at a cost of $29,830. The commenter stated that, for a double-decker bus, the IMMI seats have a total weight of 2,263 kg (4,988 lb) at a cost of $53,716, whereas the Van Hool seats have a total weight of 1,676 kg (3,695 lb) at a cost of $42,390. Coach USA noted that these estimates do not include costs associated with reinforcement of the bus floor for FMVSS No. 210, which NHTSA estimated at $3,000 per bus in the PRIA. It also added that the cost penalties did not include the reduced fuel efficiency of transporting ''heavier'' FMVSS No. 210 compliant seats, which it estimated as an increase in lifetime fuel cost of $4,584 to $6,217 for a single deck motorcoach and $6,422 to $8,710 for a double-decker motorcoach.[135]

Coach USA was concerned about the cumulative impact of possible regulations resulting from NHTSA's Motorcoach Safety Plan on the weight of motorcoaches. It stated that Federal law imposes weight limits on commercial vehicles on public highways, and while motorcoaches are currently exempt from the general weight limitation, they are still subject to a limit of 10,866 kg (24,000 lb) per axle. It stated that many motorcoaches are already close to this upper limit. Coach USA noted that the motorcoach weight exemption is up for legislative renewal in the upcoming transportation reauthorization and if the exemption is not continued, motorcoaches will be required to meet the general weight limitation, which is currently a maximum of 9,072 kg (20,000 lb) per axle. Coach USA stated that even if the exemption is renewed, manufacturers are likely to struggle to comply with the new NHTSA regulations that will add weight, such as roof crush and window glazing standards, while remaining under the statutory weight limit. Coach USA believed that the European seat belt standard will not increase the weight of motorcoaches to the same degree as FMVSS No. 210.

Agency Response

The information available to the agency on cost and weight varied greatly. Commenters opposed to the adoption of FMVSS No. 210 (Prevost, Van Hool, Coach USA, and Chicago Sightseeing)[136] [137] suggested that motorcoach passenger seats with anchorages that meet FMVSS No. 210 will be heavier than their European counterparts, whereas commenters Greyhound (a transportation provider already purchasing and operating buses with lap/shoulder belts and FMVSS No. 210 compliant seats), IMMI and C.E. White (seat suppliers already manufacturing and selling FMVSS No. 210 compliant seats in the U.S. for the affected buses, with lap/shoulder belts) stated that in their experience, the seats do not weigh appreciably more.

The relevant, best available information on this issue is persuasive in support of a finding that seats meeting FMVSS Nos. 208 and 210[138] will not weigh appreciably more than seats meeting the ECE regulations. We found the information provided by Greyhound, IMMI, and C.E. White compelling due to its empirical basis and the commenters' first-hand experience with the subject seats. In addition, we also evaluated Australia's experience with lap/shoulder belt requirement for motorcoaches, and learned that bus seats with integral lap/shoulder belts have been developed to meet Australian Design Rule 68 (requiring lap/shoulder seat belts with a 20 g crash force capability) that were ''more than twice as strong, weighed less and were not significantly more expensive (excluding the cost of seat belts) to produce than the original products.''[139]

Prevost, Van Hool, and Coach USA estimated that lap/shoulder belt-equipped seats meeting FMVSS No. 210 weigh much more than seats meeting ECE R.14 and ECE R.80. According to Prevost, the installation of lap/shoulder belts increases the weight of the affected vehicles by at least 454 kg (1,000 lb) and each 79 kg (175 lb) could reduce the passenger capacity by one. Van Hool estimated that a two-occupant seat with FMVSS No. 210 anchorages will weigh about 15 kg (33 lb) more than its ECE R.14/ECE R.80 seats, which the commenter said is a 420 kg (926 lb) increase for a 56-passenger bus. In its estimate, Van Hool approximated the weight of an EU-approved lap/shoulder belt equipped seat at 36 kg (79 lb) and an FMVSS No. 210 compliant seat at 51 kg (112 lb). Coach USA estimated that a standard two-occupant Van Hool EU-approved seat at 40 kg (88 lb), a Van Hool slider seat version at 54 kg (119 lb), an IMMI seat with FMVSS No. 210 anchorages at 54 kg (119 lb), and an IMMI slider seat version at 73 kg (161 lb). It stated that the IMMI seats resulted in a 419 kg (923 lb) increase in weight over the Van Hool seats for a single deck motorcoach and a 586 kg (1,293 lb) increase for a double-deck motorcoach.

Only Coach USA identified the manufacturer of the FMVSS No. 210 seat that it used in its weight estimate—IMMI—and, according to the data it used in its vehicle weight estimate, the two-occupant IMMI seat is 14 kg (31 lb) heavier that the ECE-approved Van Hool seat. Yet, IMMI had stated in its comment that there would be only limited-to-minor material reductions, resulting in minimal cost and weight savings per seat assembly if the anchorage requirements were reduced to ECE R.14 loads. (IMMI did not quantify these savings.)

To understand better Coach USA's comment, we looked closer at the IMMI seat used by Coach USA in its estimate and realized that the particular IMMI seat had design features that added weight to the seat, such as IMMI's SafeGuard SmartFrame™ technology. Because the features are not needed for the seat to meet FMVSS No. 210 and all other applicable FMVSSs, we determined the seat was not

[134] Coach USA's submission estimated that a standard IMMI two occupant seat weighs 54 kg (119 lb), an IMMI slider seat weighs 73 kg (161 lb), a Van Hool standard two occupant seat weighs 40 kg (88 lb), and a Van Hool slider seat weighs 54 kg (119 lb).

[135] Coach USA extrapolated these costs from data provided in NHTSA, Preliminary Regulatory Impact Analysis, FMVSS No. 208 Motorcoach Seat Belts (August 2010).

[136] Prevost, Van Hool, and Coach USA are or are affiliated with European bus manufacturers or operators.

[137] Bus driver David Kollisch estimated that heavier load-rated seat belts proposed in the NPRM will add 4,536 kg (10,000 lb) to a motorcoach, but provided no basis for this estimate.

[138] As well as meeting FMVSS No. 222's seat deflection requirements.

[139] ''Three Point Seat Belts On Coaches—The First Decade In Australia,'' Griffiths et al., Abstract ID 05–0017, 19th International Technical Conference on the Enhanced Safety of Vehicles, June 2005, *http://www-nrd.nhtsa.dot.gov/pdf/esv/esv19/05-0017-O.pdf* (cited also in footnote 39, August 18, 2010 NPRM).

representative of a typical seat with FMVSS No. 210 compliant anchorages. We concluded that a more typical seat advertised as having anchorages that meet the FMVSS No. 210 requirements is the Amaya-Astron Torino G and A–210 model coach seats, which are available through Freedman. These seats weigh 39 kg (86 lb) and 40 kg (88 lb), respectively,[140] as opposed to the weight of the IMMI seat as reported by Coach USA (weighing 54 kg (119 lb)).

The information from the seat manufacturers was compelling, since they are now selling the seats at issue. Seat manufacturer C.E. White commented that it has been proven that a lightweight single frame seat structure can be manufactured that meets the criteria of FMVSS No. 210, with energy absorption capability, and provided confidential data supporting its claim. IMMI stated that its own review determined that the reduction of the anchorage requirements to those of ECE R.14 will result in minor material reductions, resulting in minimal savings per seat assembly.

We found the information provided by Greyhound of striking importance, since the commenter has first-hand experience operating buses with FMVSS No. 210 compliant, lap/shoulder-equipped passenger seats. Greyhound stated that it has installed IMMI seats that meet the FMVSS No. 210 requirements in its newer buses, and found in its real-life experience there has been no adverse consequences related to weight, comfort, or cost.

The Australian motorcoach industry had similar concerns regarding increased seat weight with the introduction of Australian Design Rule 68 (ADR 68) in 1994.[141] The ADR 68 dynamic test requirements use a 20 g acceleration pulse, which is 1.5 times greater than the pulse used in the NHTSA sled tests, and the ADR 68 static test total loads are also significantly greater than those required by FMVSS No. 210.[142] In spite of the more stringent requirements of ADR 68, Australian motorcoach seat suppliers have reported that ADR 68 seats with integrated lap/shoulder belts weigh approximately 25 kg (55 lb) to 30 kg (66 lb) for a two-occupant seat.[143] Styleride (*http://www.styleride.com.au*) and McConnell Seats Australia (*http://www.mcconnellseats.com.au*) currently manufacture seats in this weight range that meet ADR 68 requirements. These ADR 68 compliant seats are lighter than the current lap/shoulder belt equipped IMMI and Van Hool seats, yet meet anchorage strength requirements that exceed that required by FMVSS No. 210.

In view of the above information, NHTSA concludes that the concerns expressed about increased seat weight are without merit. Lap/shoulder belt-equipped seats that meet the requirements of FMVSS No. 210 are available in the U.S. that are equivalent in weight to the European seats, and will continue to be available after this final rule.

Other Concerns

Some commenters expressed concerns that the weight increases to the bus seats resulting from meeting FMVSS No. 210 would potentially reduce fuel economy, reduce passenger-carrying capacity, and affect axle weight limits. After considering all available information, we have determined these concerns to be unfounded. In view of the light weight of ADR 68 seats, and the information from C.E. White, IMMI and Freedman, we believe that the average weight increase of the affected buses resulting from this rule will be in line with the estimates made in the agency's cost tear-down study.[144] The agency's cost tear-down study attempts to estimate only the weight of the lap/shoulder belt addition. It estimated that the weight of a domestic bus seat added was 2.7 kg (5.98 lb) per 2-person seat, resulting in a 54 passenger bus weight increase of 73.0 kg (161 lb). Any further increase in vehicle weight, or reduction in passenger capacity, will result from the manufacturer's or purchaser's selection (or design) of seat models and features.

Van Hool, Coach USA, and ABA submitted comments that discussed the cost implications of requiring passenger seats on the affected buses to meet FMVSS No. 210 as compared to ECE R.14/ECE R.80. Coach USA provided an analysis comparing the total cost to outfit its single and double-decker motorcoaches with IMMI seats that meet FMVSS No. 210, as compared to Van Hool seats that meet ECE R.14/ECE R.80 requirements. Coach USA estimated that the additional cost to fully outfit a vehicle with IMMI seats, as opposed to Van Hool seats, to be $10,970 for a single deck bus and $13,768[145] for a double-decker bus (including the estimated cost of $3,000 for reinforcement of the bus floor). This estimate for the single deck bus is slightly less than, but reasonably in line with, the estimate of $12,900 in the PRIA. However, it is significantly higher than our estimate in the FRIA of $2,110 to add lap/shoulder belts for the passenger seats in a 54 passenger bus, which is based on the cost tear-down study.

However, Coach USA also estimated the related increase in lifetime fuel costs due to what the commenter believed would be the extra weight of the IMMI seats to be $4,584 and $6,217, at 3 percent and 7 percent discount rates, respectively.[146] This is a significant increase over that estimated in the PRIA and FRIA. We believe that the 54 kg (119 lb) IMMI seats Coach USA used in its estimate may represent seats at the higher end of the weight spectrum for FMVSS No. 210 seats. As explained above, ADR 68 seats that can withstand anchorage loads in excess of FMVSS No. 210 loads weigh as little as 25 kg (55 lb) to 30 kg (66 lb) for a two-occupant seat. Seat suppliers C.E. White and IMMI affirm the practicability of manufacturing lightweight seats meeting FMVSS No. 210.

We conclude that the data indicate that seats meeting FMVSS No. 210 will result in little, if any, increase in total vehicle weight, depending on how efficiently the vehicle seat and/or attachment points are strengthened. Considering the weight of 40 kg (88 lb) of current Van Hool seats (according to Coach USA's submission), the data indicate there may even be a total weight decrease if the weight can be

[140] Weight data was provided by Freedman.

[141] Griffiths et al., ''Three Point Seat Belts on Coaches—The First Decade in Australia,'' *supra.*

[142] ADR 68 has both dynamic and static test options. For the dynamic option, ADR 68 requires a crash pulse with a 49 km/h (30.4 mph) delta-V and a peak deceleration of 20 g for at least 20 milliseconds. In comparison, the NHTSA motorcoach crash test had the same delta-V, and a 13 g deceleration. Based on the 1.5 greater deceleration in the ADR 68 crash pulse, we estimate peak belt anchorage loading would be 1.5 times greater than that measured in the NHTSA test. Recall that the agency research determined that FMVSS No. 210 static loading was about 1.1 times the peak loading from sled testing performed with the motorcoach crash pulse. Thus, the static load generated by the ADR 68 dynamic options is approximately 1.4 (1.5/1.1) times that of FMVSS No. 210. The ADR 68 static loading is a combination of belt pull forces, push forces on the seat back and inertial loading based on the seat mass. A comparison can be made between the x-direction (fore-aft) loading created by FMVSS No. 210 and ADR 68, assuming a specific seat mass (30 kg (66 lb)) and belt pull angle (20 degrees above horizontal). This analysis indicates the ADR 68 static load option generates approximately 1.3 times the loading of FMVSS No. 210 in the x-direction.

[143] Id.

[144] See NHTSA Docket No. NHTSA–2011–0066–004.

[145] There may be an error in Coach USA's double-deck estimate because it reported a total seat cost for the IMMI and Van Hool of $53,716 and $42,390 respectively, which results in a difference of $11,326.

[146] Coach USA's estimate was based on a weight increase of 419 kg (923 lb) and was extrapolated from the values of $1,812 and $1,336 estimated in the PRIA for a weight increase of 122 kg (269 lb).

reduced to the 25 kg (55 lb) to 30 kg (66 lb) weight of ADR 68 seats.

We do not believe that requiring passenger seats on the affected buses to be equipped with anchorages that meet FMVSS No. 210 will necessarily reduce seat comfort (because of increased stiffness) as suggested by Van Hool and Coach USA. Seat comfort is more dependent on seat cushion design elements such as cushion material, thickness, shape, and cover, rather than on the underlying frame. If the ability of a seat to meet FMVSS No. 210 requirements equated to reduced comfort, then this problem would have arisen in newer passenger vehicles that have seats with fully integrated seat belts, especially with the front seats of most convertibles and some rear seats of multipurpose passenger vehicles. Importantly, Greyhound, which has been operating buses with IMMI lap/shoulder belt equipped passenger seats that meet FMVSS No. 210 since 2008, stated ''The installation of these seats has not caused Greyhound to reduce the number of passengers it can accommodate. The seats are quite comfortable, do not weigh appreciably more than seats equipped with belts meeting the European standard, and are competitively priced.'' After considering the above information we conclude that the data indicate that seats meeting FMVSS No. 210 will not reduce seat comfort or unduly affect costs.

Harmonization

Commenting in support of the ECE regulations, European manufacturer Van Hool stated that implementation of FMVSS No 210 will require vehicle manufacturers to rethink their structural concept and production, which will increase manufacturing cost and the price of motorcoaches, which will ultimately be passed on to customers, whereas, Van Hool stated, harmonization with the European standards would avoid such costs. Coach USA and American Bus Association (ABA) submitted similar comments and added that harmonization would enhance flexibility and promote turnover of the fleet to newer motorcoaches.

NHTSA has compared ECE R.14 and ECR R.80 to FMVSS No. 210 to see if the ECE regulations offer greater benefits than FMVSS No. 210. We have not found ECE R.14 and ECE R.80 to be sufficient to protect against foreseeable crash risks.[147] Our sled and static testing indicated that ECE R.14/ECE R.80 regulations do not provide the level of seat belt anchorage strength required for the foreseeable frontal crash scenario represented by a 48 km/h (30 mph) barrier impact. The static load requirements for ECE R.14 and ECE R.80 are far below that required to generate the peak seat anchorage loads that NHTSA measured in its sled tests, which means a seat that minimally meets the ECE required static loads for M3 vehicles may separate from its floor anchorages in a crash, especially in a severe frontal crash at seats where tri-loading occurs.

We have also compared ECE R.14 and ECR R.80 to FMVSS No. 210 to see if the ECE regulations offer less costs than FMVSS No. 210. The information from the seat manufacturers indicate that meeting ECE R.14 and R.80 would not necessarily result in cost or weight savings. Seat supplier IMMI stated that its own review determined that meeting ECE R.14 would result in minor material reductions, resulting in minimal savings per seat assembly. U.S. seat suppliers C.E. White and IMMI and possibly others already have established their structural concepts and production to meet FMVSS No. 210.

When Australia decided to mandate lap/shoulder belts for passenger seats in motorcoaches, Australia determined that the then-existing ECE regulation (ECE R.80) was not sufficient to ensure seats would not fail in the type of catastrophic coach crashes the country sought to address.[148] Australia had been in the process of considering adopting ECE R.80, but decided that a regulation based on ECR R.80 would not have been effective in those crashes. *Id.* Australia developed and adopted ADR 68 to address the safety need it identified.

We have thoroughly assessed the ECE regulations at issue to compare the benefits achievable under ECE R.14 and ECE R.80 and FMVSS No. 210, in accordance with guiding principles for harmonization. There is a large disparity between the anchorage load requirements of ECE R.14 and R.80 and FMVSS No. 210. While a seat meeting FMVSS No. 210 could be readily designed to also meet ECE R.14 and ECE R.80, seats just meeting the strength requirements for even M2 vehicles would not be capable of complying with FMVSS No. 210. Thus, a compliance option is unacceptable to NHTSA, since it would permit part or all of the covered bus fleet being equipped with seat belt anchorages that cannot withstand the forces generated in foreseeable frontal crashes.

Seat Back Impact and Energy Absorption

In the NPRM, NHTSA requested comment on the energy-absorbing capability of current seat backs to provide impact protection to occupants. Unbelted occupants in the NHTSA sled tests, primarily 5th percentile female dummies, had HIC and Nij values in excess of IARVs when they struck the seat back in front of them. Additionally, in some sled tests the belted dummies interacted with the forward seat back when unbelted dummies in the rear seat struck their seat back, resulting in elevated HIC and Nij values to the belted dummies. We asked for information on whether there may be some potential for seat backs to become stiffer to accommodate the additional loads from seat belts. We requested information on specifications on force-deflection characteristics and/or impact deceleration characteristics for seat backs, such as the absorption test in ECE R.80 and the impactor test in ADR 68.

Comments

Eleven commenters addressed the issue of seat back stiffness, with many suggesting that NHTSA consider adding impact and/or energy absorption requirements such as those in ECE R.80, FMVSS No. 201, ''Occupant protection in interior impact,'' or FMVSS No. 222.

Several commenters believed that ECE R.14 and ECE R.80 should be adopted instead of FMVSS No. 210, based in large part on the fact that ECE R.80 has seat back energy absorption requirements while FMVSS No. 210 does not. This issue was addressed earlier in this preamble and, to avoid redundancy, we will not repeat here our reasons for adopting FMVSS No. 210 rather than the ECE regulations. We reiterate, however, that the ability of the seat back to absorb the loading and provide protection for the rear seat passenger is an aspect of performance not regulated by FMVSS No. 210. Manufacturers have the ability to meet FMVSS No. 210 and to design energy-absorbing seat backs to account for the loading from an occupant aft of the seat, if they believe energy absorption is an appropriate aspect of performance to address.

In this section of the preamble, we explore whether there is a need for NHTSA to regulate in this area. In the comments, there was no consensus that

[147] Coach USA asserted that all of the frontal benefits we estimated resulting from meeting FMVSS No. 210 would be insignificant, a claim we have refuted.

[148] Griffiths et al., ''Three Point Seat Belts on Coaches—The First Decade in Australia,'' supra. The authors state that in 1989, a coach crash resulted in 19 fatalities and a second crash resulted in 35 fatalities. Both crashes were head-on crashes (the first with a heavy truck, the second with another coach) on a highway with a speed limit of 100 km/h (62.1 mph). *Id.*

ECE R.80's energy absorption requirements were the preferred approach. Many comments were submitted on this issue. Several commenters suggested that FMVSS No. 222's seat deflection requirements were superior to those of ECE R.80. Some commenters expressed support for FMVSS No. 201's requirements.

Seat supplier C.E. White believed that NHTSA should regulate seat back energy absorption characteristics, and recommended that NHTSA adopt the school bus compartmentalization requirements of FMVSS No. 222. C.E. White commented that ''without a limitation on the deflection of the upper torso anchorage point of the test seat you stand the chance of jeopardizing the protection of compartmentalization for the unrestrained occupants to the rear of the test seat due to override of the seat back or diminish the torso restraint effectiveness for the restrained occupants of the test seat.''

Seat supplier Freedman stated that some energy absorption capability should be built into seat backs for passenger protection and recommended that FMVSS No. 201 be used as a reference for any energy absorption standards for seats in motorcoaches.

Seat supplier IMMI stated that consideration must be made for injury reduction of unrestrained passengers and, to that end, a requirement for motorcoach seats to provide energy-absorbing capabilities as a passive form of occupant protection should be adopted by NHTSA. IMMI expressed concern that as seat backs are developed to meet the requirements of FMVSS No. 210, severe stiffening of the seat backs will occur which it stated may increase the injury potential for unrestrained occupants. IMMI stated that existing non-belted motorcoach seat backs offer minimal injury mitigating energy-absorbing capability and that the seat backs fold over and direct occupants up into the overhead racks. IMMI also stated that it studied some European seats meeting ECE R.14 and ECE R.80, both at the M2 (10 g) and M3 (7 g) levels, and found them to have anchorages that withstood the loads specified in FMVSS No. 210, but have seat backs with ''unacceptably low seat back energy absorption when subjected to the [FMVSS No. 222] load deflection test.'' IMMI stated that in sled tests it conducted, it found that these ECE seats folded forward and directed the unrestrained dummies out of the seat compartment, which resulted in HIC values over 600.[149]

Based on its studies, IMMI recommended that NHTSA adopt seat back energy absorption requirements for seats on the affected buses. It suggested that a static test similar to the forward and rearward force/deflection tests specified in FMVSS No. 222 could be used to assess energy absorption of the seat back. In addition, IMMI suggested that the following requirements be established for motorcoach passenger seats:

- A minimum seat back height of 150 mm above the shoulder belt anchor point to reduce the potential for ''rideover'' by taller occupants.
- A minimum shoulder belt anchor point height of 520 mm above the seating reference point, which is equal to that required for school bus seats.
- Criteria to provide occupant impact protection with the interior of buses, including the seat back surface and items such as tray tables, video screens, coat hooks, and grab handles.
- Criteria for seat spacing, seat orientation, use of tables, and all other arrangements that could factor into proper energy absorption of a seat back for an unrestrained occupant.

Bus manufacturers MCI, Setra, and Van Hool provided comments regarding impact and energy absorption requirements for the passenger seats. MCI was concerned about the energy-absorbing capability of seat backs meeting FMVSS No. 210 and recommended a form of static testing on a bus frame using a unique loading profile that combined aspects of ECE R.14 (10 g; M2 vehicles) and FMVSS No. 210. Setra stated that the ECE ''impact requirements'' were needed to guard against ''personal injury.''[150] Van Hool said that energy absorption requirements for an unbelted passenger should be addressed and that the static test of ECE R.80 is similar to the compartmentalization requirement in FMVSS No. 222 for school buses.

Greyhound stated that NHTSA should specify seat back energy absorption standards. Greyhound stated that it is installing the IMMI seat on all of its new equipment in large part because of the seat's unique energy-absorbing capability.

Agency Response

In general, all of the commenters who responded on this issue were concerned that requiring motorcoach passenger seats to meet the requirements of FMVSS No. 210 will result in stiffer seat backs that may be more injurious to occupants seated behind them, particularly unbelted occupants. Commenters recommended that NHTSA adopt some form of energy absorption requirement for the seat back. Five of the commenters (CE White, Freedman, IMMI, American Seating, and Greyhound) recommended that seat back energy absorption requirements from existing FMVSSs be extended to motorcoach passenger seats. One commenter (MCI) recommended an alternate static load test which it suggested would prevent stiffening of the seat backs. Five of the commenters (Setra, Van Hool, Coach USA, ABA and ABC) recommended adoption of the European regulations, partly because ECE R.80 has seat back energy absorption requirements.

As explained earlier in this document, seat stiffening as it relates to impacts from belted and unbelted occupants into the seat back in front of them is not an inevitable consequence of meeting FMVSS No. 210. FMVSS No. 210 does not impose displacement limits on the seat belt anchorages; therefore, the anchorages (and seat back, in this case) must simply be strong enough to withstand the required loads and can deform in the process. IMMI indicated in its comment that it found in some tests of European seats that the seats met FMVSS No. 210, but had ''unacceptably low'' seat back energy absorption when subjected to the FMVSS No. 222 forward load deflection static test. IMMI also noted that in sled tests the seat backs of these seats folded forwarded and directed test dummies out of the compartment. Both these behaviors are indicative of seat backs that are not stiff enough, rather than too stiff with respect to their ability to provide compartmentalization for unbelted occupants.

The commenters varied significantly in their views as to the appropriateness of various approaches for the covered buses.

Some commenters supported FMVSS No. 222's school bus requirements. FMVSS No. 222 is a complex, multifaceted standard that requires very strict seating requirements in order for compartmentalization to function properly. Applying the concepts of the standard to the buses covered under today's final rule could result in school bus style seats and barriers, with very tight seat spacing, which may or may not be appropriate for the covered buses. We are unable to adopt FMVSS No. 222-type compartmentalization

[149] Although not specifically reported by IMMI, we assume this is a HIC_{15} value, with a limit of 700, since IMMI referenced FMVSS No. 208.

[150] ECE R.80 is conducted with the occupant both belted and unbelted and it specifies a HIC of 500 for an occupant hitting the seat in front.

requirements for the passenger seats in the affected buses at this time, without fully considering the safety need for the requirements, in addition to related benefits, costs, practicality, and technical challenges. In addition, such a requirement could not be adopted without providing the public an opportunity to comment on this issue.

We cannot agree at this time that the seat back energy absorption requirements of ECE R.80 are most appropriate. The seats advertised as ECE R.80 compliant that were tested by the agency in support of the NPRM, particularly in the full vehicle barrier impact, did not demonstrate ''energy absorption'' or ''compartmentalization'' characteristics. IMMI's tests of European seats also showed a lack of compartmentalization and energy absorption. Coach USA's tests of Van Hool ECE-approved seats resulted in HIC_{15} values for the unrestrained occupants that were above the IARV set in FMVSS No. 208.

NHTSA will undertake further testing of seat backs on affected vehicles to further evaluate the energy absorbing capability of current seats. Section 32705 of the Motorcoach Enhanced Safety Act directs the Secretary to research and test enhanced occupant impact protection technologies for motorcoach interiors to reduce serious injuries for all passengers of motorcoaches and to research and test enhanced compartmentalization safety countermeasures for motorcoaches, including enhanced seating designs. The Act states that not later than two years after the completion of such research and testing, the Secretary shall issue final motor vehicle safety standards if the Secretary determines that such standards meet the requirements and considerations of section 30111(a) and (b) of the Vehicle Safety Act.

XVII. Lead Time

The NPRM proposed a 3-year lead time for new bus manufacturers to meet the new lap/shoulder seat belt requirements. We believed that 3 years were necessary since some design, testing, and development will be needed to certify compliance to the new requirements. We proposed to permit optional early compliance with the requirements.

Comments

Coach USA supported the proposed 3-year lead time. It concurred that the lead time period would allow companies to do the planning and testing involved and would ease the financial burden. UMA also supported a 3-year lead time with early compliance permitted.

Commenters supporting a shorter lead time included some seat suppliers and a number of consumer groups. IMMI said it believes that the lead time could be reduced to 2 years because the technology to comply with the proposed requirements has been commercially available for several years. American Seating supported reducing the lead time to 2 years, suggesting that 3 major motorcoach manufacturers can now supply vehicles in the U.S. that meet the NPRM's proposed requirements.

Many consumer groups supported a shorter lead time. The American Association of Classified School Employees (AACSE) commented that most motorcoaches today are already built with seat belt anchorages at all seating positions. The National Association of Bus Crash Families/West Brook Bus Crash Families suggested an 18-month lead time, stating that manufacturers are already aware of the changes needed to comply with the proposed lap/shoulder belt rule. Advocates also supported an 18-month lead time, suggesting that only those manufacturers that have not previously produced motorcoaches with seat belt anchorages or integrated anchorages should need more than 18 months to implement the requirements of the final rule. The National Association of Bus Crash Families wanted NHTSA to implement a lead time of not longer than 1 year. Four private individuals supported a lead time shorter than 3 years.

Agency Response

Section 32703(e) of the Motorcoach Enhanced Safety Act states that any regulation prescribed in accordance with subsection (a) (which is the provision regarding safety belts) shall, with regard to new motorcoaches, ''apply to all motorcoaches manufactured more than 3 years after the date on which the regulation is published as a final rule.''

Consistent with the Motorcoach Enhanced Safety Act and the effective date proposed in the NPRM, this final rule specifies a 3-year lead time for manufacturers of new buses to meet the lap/shoulder belt requirements. In our judgment, we believe that 3 years is appropriate to provide sufficient time to bus manufacturers to design and test their anchorage systems to the requirements of this final rule. Although some manufacturers are already offering seat systems that comply with FMVSS No. 210, other manufacturers have not incorporated seats with lap/shoulder belts or have incorporated seats with lap/shoulder belts that meet a lesser strength requirement. For the latter manufacturers, some may require strengthening or redesign of motorcoach floor and side wall seat anchorage systems to meet the adopted requirements, in addition to purchasing or designing seats that can withstand the required loads. The 3-year lead time will give these manufacturers time to plan the implementation of the new standard more efficiently and effectively than a shorter lead time. (Under 49 CFR 571.8(b), manufacturers of vehicles built in two or more stages (multi-stage manufacturers) are provided an additional year of lead time for manufacturer certification of compliance. This additional year provides multi-stage manufacturers, many of which are small businesses, added flexibility and time to make the necessary assessments to acquire a basis for certifying their vehicles' compliance.)

A 3-year lead time is important for reducing the chances of manufacturers making mistakes that could lead to future non-compliances. Corrective action for potential non-compliances is likely to be much more costly than designing and manufacturing the buses correctly to start.

An important part of this efficient implementation is related to vehicle weight. As was discussed earlier, commenters expressed concern over possible weight increases if seats had to meet FMVSS No. 210. As we explained earlier in response to those comments, we do not believe that seats with anchorages that meet FMVSS No. 210 need to be much heavier or bulkier than current seats. Indeed, seats now offered by Australian seat suppliers that meet ADR 68 weigh less than the original seats. Australian government officials have noted that early prototype seats did get heavier in response to ADR 68, as manufacturers simply beefed up (strengthened) existing seats with steel bracing. However, when seat designers decided to redesign seats from scratch, the new designs were ''more than twice as strong, weighed less and were not significantly more expensive (excluding the cost of seat belts) to produce than the original product.'' [151] Allowing a 3-year lead time will give sufficient time to seat and vehicle designers, who wish to do so, to develop modern seat designs that meet FMVSS No. 210 and that provide energy-absorption features, while minimizing any weight increase.

Seat suppliers American Seating and IMMI recommended that the lead time

[151] Griffiths et al., ''Three Point Seat Belts On Coaches—The First Decade In Australia,'' *supra.*

be shortened to 2 years. We note that these seat manufacturers are affiliated with each other and offer the same Premier® branded seat, which is advertised as capable of meeting FMVSS No. 210 requirements, in addition to other FMVSSs. Thus, their suggestion may be more representative of time necessary for vehicle manufacturers to modify the vehicle structure to accept a seat such as theirs. However, as stated above, we believe the 3 years of lead time will offer both seat and vehicle manufacturers the opportunity to implement the standard more efficiently, particular in regard to weight.

Various consumer advocates and commenters from the general public requested an even shorter lead time than 2 years. Many of the comments were based on the current availability of bus seats with seat belts. Some argued that the 3-year lead time will result in unnecessary fatalities. NHTSA is keenly aware of the potential loss of life inherent in any single crash of the covered buses, which is why the agency has made this and other rulemaking actions initiated pursuant to the ''NHTSA's Approach to Motorcoach Safety'' plan a high priority. Although we believe that many bus manufacturers will comply with this final rule before the 3-year deadline, it is important to give other manufacturers the time to do the job correctly. In addition, to the extent that many operators of the affected buses now offer vehicles with lap/shoulder seat belts, we believe that early compliance with the final rule will result in an increasing availability of buses with lap/shoulder seat belts before the 3-year date.

Advocates suggested in its comments that the final rule could provide a staggered compliance schedule, with the agency identifying motorcoaches that are not currently compliant with the final rule and allowing 3 years to certify compliance, while the other manufacturers would only get 18 months to certify. We believe such an approach is not viable. The agency's limited compliance testing budget should not be used simply to identify vehicles that either get 18 months to certify (if found to be compliant, which in and of itself would be difficult to verify short of testing a vehicle) or 3 years to certify (if found to not comply) to the new standard. This would be an inefficient use of agency resources with little, if any, potential safety benefit.

XVIII. On Retrofitting Used Buses

In the NPRM, we asked for comments on the issue of retrofitting existing (used) buses with seat belts at passenger seating positions. We did not include a retrofit proposal as part of the NPRM, but we wanted to know more about the technical and economic feasibility of a retrofit requirement. Our understanding at the time of the NPRM was that significant strengthening of the motorcoach structure would be needed to accommodate the additional loading from the seat belts, particularly for the older buses. It was not apparent that establishing requirements similar to or based on the proposed requirements would be cost effective, or feasible from an engineering perspective.

Commenters were sharply divided in their opinion of the merits of a retrofit requirement. In general, motorcoach manufacturers and operators strongly opposed a retrofit requirement as being economically and technically untenable. Seat suppliers did not support a retrofit requirement. Consumer advocates and individual members of the public strongly supported a retrofit requirement.

The following points were made by various commenters.

On the Merits of Retrofitting Buses

- UMA, which represents motorcoach owners/operators and industry suppliers, stated that the motorcoach industry is ''capital intensive, competitive and generally a marginally profitable business, at best.'' UMA stated that any retrofit requirement or retrofit standard would likely divert financial resources from other safety-related efforts, such as training and maintenance. It stated that these efforts are at the core of the current motorcoach industry safety record, and any diversion of resources could have the undesirable effect of increasing, rather than decreasing, motorcoach accidents and the related injuries and fatalities.
- UMA commented that a retrofit requirement would either drive companies out of business or drive up costs of what the commenter called an already safe mode of transportation, adversely affecting customers who require economical transportation, such as students and the elderly.
- ABA, representing bus operators, suppliers, and manufacturers, did not support a retrofit requirement for seat belts on motorcoaches. ABA did not believe that a retrofit requirement is economically or technically feasible for the reasons stated in the NPRM. ABA believed that owners of existing vehicles should not be forced into renewed construction to meet performance requirements that differ from those to which they were originally built.
- ABA and Coach USA stated that NHTSA does not have the statutory authority to impose retroactive, vehicle-based performance standards. The commenters suggested that the agency's authority only extended to requiring the retrofit of ''equipment'' items, such as retro-reflective tape and rear impact (underride) guards, and does not extend to standards requiring substantial vehicle restructuring and a case-by-case determination with regard to the actions necessary to reach compliance.
- Coach USA believed that a retrofit requirement could push motorcoaches over the statutory weight limits for operation on highways.
- Twenty-nine operators submitted identical letters commenting that any retrofit requirement would either put their company out of business or severely restrict their operations. Operators commented that they do not have the technical capacity to test vehicles to ensure that they would comply with any new performance requirements and have no way to ensure or certify that their vehicles, once equipped with seat belts, would meet the government standards.
- Peter Pan commented that retrofitting motorcoaches that are less than 5 years old is expensive and unnecessary and there is no way for the operator to certify that retrofitted vehicles would meet the government standard. It stated that, if the agency decides to require retrofits, the retrofit requirement should be implemented in a similar manner as the Americans with Disabilities Act (ADA), where operators were given 12 years (the average fleet turnover rate) to equip their fleet with lifts.
- Greyhound also suggested the approach of DOT setting a date by which all motorcoaches on the road must have lap/shoulder belts, e.g., a date representing the average over-the-road bus fleet turnover rate, which the commenter said was 12 years.
- Star Shuttle and Charter commented that a retrofit requirement would put them out of business and reduce the value of their existing fleet. It requested that the agency establish a multi-year grant program, whereby operators could obtain funding for retrofitting or acquisition of new seat belt-equipped coaches.
- Monterey-Salinas Transit commented that there could be service reductions with retrofitting based on cost to retrofit and out-of-service time needed to retrofit the motorcoach.
- Plymouth & Brockton expressed concern that in many cases the cost to retrofit buses would exceed the resale value of the buses involved. It urged NHTSA to require seat belts in new buses, but let the natural process of

vehicle attrition allow companies to fully comply with the regulation over time.

• Prestige Bus Charters commented that while it supported requirements for new coaches to be equipped with seat belts, it would be very difficult to absorb the cost to retrofit its buses.

• Seat belt supplier IMMI commented that NHTSA should not require retrofit of lap/shoulder belts, but rather establish technical/performance standards/requirements when a retrofit is determined to be necessary or desirable to fulfill a market-driven need. It added that retrofitted motorcoaches should be made capable of meeting the same performance standards as newly manufactured motorcoaches. IMMI concurred with the many practical issues identified by the agency in the NPRM and that each individual bus would need to be evaluated before a retrofit could be accomplished adequately.

• The National Association of Bus Crash Families/West Brook Bus Crash Families supported a mandatory retrofitting requirement. It commented that without one it could take up to 20 years or more before all motorcoach models are equipped with lap/shoulder seat belts. While acknowledging that for older motorcoaches, design and cost burdens may necessitate the installation of lap belts rather than lap/shoulder belts, the group said it would be ''unfair and unwise'' to have a dual system of motorcoach transportation available to the public—one offering the protection of seat belts and the other not doing so.

On the Merits of Retrofitting Lap Belts Instead of Lap/Shoulder Belts

• IMMI was opposed to an approach that would specify used motorcoaches to be retrofitted with lap only seat belts, rather than lap/shoulder belts, given the agency's research findings that demonstrate that lap/shoulder belts provide the best protection.

• Greyhound did not support a lap belt only retrofit specification, referring also to poor performance of lap belt only systems in NHTSA testing.

• National Association of Bus Crash Families/West Brook Bus Crash Families indicated that motorcoaches manufactured before 2000 that are not structurally robust enough for lap/shoulder retrofitting could be outfitted with just lap belts.

On the Merits of Retrofitting Only a Portion of the Fleet

• Greyhound said that limiting retrofitting to buses manufactured within 5 years of the effective date might avoid unduly impacting smaller operators with older buses that may not be able to sustain the loads of seats with lap/shoulder belts.

• ABA suggested the idea of a voluntary retrofit program for vehicles that were originally built to be seat belt-ready to the European standards (or to the FMVSS), but that were sold without seat belts.

• IMMI said that later model buses could be retrofitted with lap/shoulder belts within 3 years of the implementation date of the final rule.

• Advocates supported a retrofit provision for motorcoaches manufactured more than 5 years prior to the implementation date. It said NHTSA should work with motorcoach carriers, and especially manufacturers, to determine which existing vehicles require retrofit before evaluating whether it is feasible to retrofit such vehicles with lap/shoulder belts. It believed that some makes of motorcoaches could be retrofitted with seat belts at a reasonable cost, or at least at the lower end of the cost range cited in the NPRM.

• SafetyBeltSafe U.S.A and Safe Ride News Publications would like a mandatory retrofit program for motorcoaches less than10 years old.

• National Association of Bus Crash Families/West Brook Bus Crash Families urged NHTSA to require the retrofitting of all existing buses with lap/shoulder belts not more than 3 years after January 1, 2011. It said it would support an interim rule allowing buses manufactured before 2000 that do not meet the structural requirements for lap/shoulder belts to have lap belts only.

Regarding Structural Issues

• Coach USA commented that retrofitting may not be possible in some older vehicles. The structure of older vehicles may not be able to support the necessary modifications and, without standards to ensure that the seats and the structure of the motorcoach can withstand the forces imposed in a crash, could result in additional safety risks.

• UMA believed that the structural modifications needed for each vehicle will depend on factors such as the original manufacturer and age of the vehicle. Arrow Coach Lines stated that retrofitting used motorcoaches with seat belts would be difficult since buses in the fleet will have different levels of deterioration.

• Some bus manufacturers and operators supported a voluntary retrofit program. Some suggested that NHTSA should establish retrofitting guidelines or provide financial support for operators to voluntarily retrofit their buses.

• ABA believed that retrofitting used motorcoaches with seat belts and ensuring that, as installed, the structural integrity of the vehicle will be sufficient to withstand specified forces or loads will require detailed knowledge of the original vehicle design, as well as analysis of the vehicle's in-use condition and technical expertise on how to upgrade the vehicle structure. Regarding manufacturer-provided retrofit kits, ABA stated that because the manufacturer does not know the use, maintenance or wear history of the vehicle, the manufacturer would not be able to assure that the bus will be capable of meeting a particular performance requirement once a belt retrofit kit is applied.

Regarding the Cost of Retrofitting

• Setra estimated that the cost of a retrofit requirement for its buses would be on the order of $85,000 per bus. It specified that retrofitting an existing motorcoach would involve: removing existing seats; removing the flooring; removing the engine in order to gain access to the bus structure at the rear; welding in a new frame structure to accommodate FMVSS No. 210 seat belt requirements; reinstalling the engine, reinstalling removed parts, installing (compliant) seats; and verifying compliance critical elements to meet the FMVSSs.

• Coach USA described NHTSA's estimate of $40,000 per vehicle as ''a significant underestimate.'' Coach USA estimated that for a single deck motorcoach, the cost will be approximately $35,000 per motorcoach to modify the motorcoach structure to meet FMVSS No. 210 seat anchorage requirements, and another $20,000 per motorcoach to replace the seats (approximately $18,000 to purchase the seats and $2,000 to install them).

• Some commenters said that the estimated costs should also include the cost to the company of taking the bus out of service while the vehicle is undergoing retrofitting. Coach USA estimated that a motorcoach will need to be taken out of service for 30 to 45 days to perform the necessary modifications, a cost that Coach USA estimates to be approximately $20,000 per motorcoach.

• UMA commented that the cost to retrofit a vehicle could easily range between $30,000 and $60,000. It noted that about 90 percent of motorcoach companies are small businesses that typically can maintain only small capital reserves to cover such exigencies as highway breakdowns or business income gaps.

• UMA stated that consumer demand for late model equipment on motorcoaches creates a significant decline in asset value after just a few years use. A retrofit requirement ''could likely quell the demand for new motorcoaches if the possibility exists for burdensome recapitalization of existing equipment looms.''

• UMA stated that most motorcoaches in the U.S. are sold direct, or by similar means, by the manufacturers of motorcoaches, and that subsequently, existing motorcoaches are routinely acquired by the manufacturers through trades. The commenter stated that it is likely the manufacturers will evaluate traded motorcoaches, particularly later models, for retrofit eligibility and possible retrofit, to increase the value and likelihood of a sale. UMA stated: ''The absence of a retrofit requirement and/or retrofit standard will likely spur the largest number of compliant seatbelt [sic] equipped in the shortest amount of time.''

Other Issues

• UMA noted that a retrofit requirement could create a cottage industry of unqualified seat belt installers, particularly for motorcoaches not used for public transportation and owned by institutions such as colleges, churches, and the like.

• ABA noted that the vast majority of motorcoach operators (approximately 80 percent) are small businesses with less than 10 employees operating fewer than 7 motorcoaches. ABA stated that the only way to ensure consistency in the evaluation and upgrading of in-use motorcoaches to a retroactive manufacturing standard is to establish Federal specifications and a Federal inspection and evaluation program. ABA stated that without Federal grants for motorcoach operators to perform such retrofits, many operators would not be able to finance such vehicle upgrades.

Agency Response

For a number of reasons, NHTSA and FMCSA have decided not to issue a rule on retrofitting seat belt systems on buses subsequent to initial manufacture. Information from bus manufacturers indicates that establishing requirements to equip buses with seat belts in all passenger seating positions subsequent to initial manufacture would not be cost effective or reasonably feasible from an engineering perspective. Significant strengthening of the bus structure would be needed, if achievable, to accommodate the additional seat belt loading, particularly for those buses that have been in service longer. In some buses, retrofitting with seat belts might not be structurally possible.

In the FRIA, NHTSA presents an analysis of the cost effectiveness of a retrofit requirement, based on the age of the bus to be retrofitted. Two assumptions about costs are included in the analysis. The low cost estimate assumes that the most recent buses can be retrofitted with new seats with lap/shoulder belts and no new structure. Thus, there is little weight gain and fuel costs are only included for the weight of the belts themselves. This is the lowest cost assumption resulting in an estimated installation cost of $14,659. As would be expected, retrofitting becomes less cost effective as a bus gets older, because costs remain the same in our example (but may actually increase in real life), but benefits decrease as there is less remaining life for the bus. Compared to the guideline of $6.3 million per life saved, even with the lowest cost estimate for a retrofit ($14,659/bus and no fuel cost), seat belt usage has to be 39 to 53 percent for a one-year-old bus to break even and it increases by about 4 percentage points per year to get to 54 to 64 percent by age five. Under a higher installation cost assumption ($40,000, with fuel costs only for the weight of the belts and not for added structure), the breakeven point in belt usage is 76 to 81 percent for a one-year-old bus and quickly becomes higher than seat belt usage in light vehicles. Retrofitting a five year-old or newer buses would result in a breakeven point in belt usage from 82 percent to greater than 83 percent, i.e., most of the range exceeds the belt usage rate for passenger vehicles. So, if one were to estimate the costs of retrofit at $40,000 per bus, retrofit is not a cost effective option for buses one to five-years-old. If one were to estimate the costs of retrofit at the lowest possible price, seat belt use would need to exceed 54 to 64 percent to make it worthwhile to retrofit a five-year-old bus. Many commenters emphasized that the cost of retrofitting will impact many small businesses that do not have large profit margins. We agree with the point that public policymakers need to consider that retrofitting costs could divert financial resources from other safety-related efforts, such as driver training and bus maintenance.[152]

We understand that many consumer groups and individuals want to accelerate the installation of seat belts in the entire motorcoach fleet by requiring retrofitting. However, comments from those in favor of retrofitting did not present information offsetting the economic and technical challenges of a retrofit requirement.

We did not obtain helpful information from the comments as to how they foresaw the enforcement of a retrofit program. It is one thing to visually inspect the buses to see if there are seat belts at passenger seating positions, it is another to assess the seat belt system to see if the seat belts and anchorages would hold in a crash and withstand the loading from the passengers. A seat belt requirement that does not have a way to assess whether belt systems will adequately restrain passengers is of diminished value.

Given the low benefits of a retrofit requirement and high costs associated with it, and given the agencies' limited resources, we have decided against developing and implementing a retrofit program. We believe that Departmental and industry resources should be applied to achieve more benefits in other program areas.

A few commenters expressed the view that NHTSA lacks the authority to require retrofitting of seat belts. A discussion of this issue does not need to be undertaken at this time since the agencies are not pursuing a retrofit program for seat belts, but it is a matter on which we disagree with the commenters, and a topic for discussion at the appropriate time. We note here that section 32703(e)(2) of the Motorcoach Enhanced Safety Act, ''Retrofit Assessment for Existing Motorcoaches,'' states that ''The Secretary may assess the feasibility, benefits, and costs with respect to the application of any requirement established under subsection (a) or (b)(2) to motorcoaches manufactured before the date on which the requirement applies to new motorcoaches under paragraph (1).'' Subsection (a) of section 32703 is the provision in the Act that directs the establishment of this final rule for safety belts on motorcoaches.

Regarding a retrofit requirement that would apply only to a subset of used buses, such as more recently-manufactured buses, there are still many challenges with a retrofit requirement for the subset of vehicles. Environmental factors and how the buses were used would affect the ability of the bus to support the belt loads. NHTSA does not have the resources to assist in the development of a practical program that would assess the performance of the retrofitted seat belts.

[152] Even with lap belts, significant strengthening of the motorcoach structure may be needed in order to accommodate the additional seat belt loading, particularly for those buses that have been in service longer. While the distribution of the loading may be different, lap belts will still need to restrain the same amount of loading as lap/shoulder belts.

None of the respondents provided data that would guide the agency in addressing this issue, even for newer buses.

XIX. Regulatory Alternatives

NHTSA examined the benefits and costs of the adopted amendments, seeking to adopt only those amendments that contribute to improved safety, and mindful of the principles for regulatory decision-making set forth in Executive Orders 12866, ''Regulatory Planning and Review,'' and 13563, ''Improving Regulation and Regulatory Review.'' NHTSA has analyzed the merits of requiring lap belts for passenger seating positions as an alternative to lap/shoulder belts for those seating positions, knowing, however, that the Motorcoach Enhanced Safety Act requires lap/shoulder belts on over-the-road buses. NHTSA also considered ECE R.14 anchorage strength requirements as an alternative to FMVSS No. 210 requirements. These alternatives are addressed below.

The Alternative of Lap Belts

The agency examined the alternative of a lap belt only requirement (as an alternative to lap/shoulder belts) for passenger seats in buses. (We note that the alternative of lap belts is not available under the Motorcoach Enhanced Safety Act requirement for lap/shoulder belts on over-the-road buses.) We determined that the lap belt alternative was not a reasonable alternative. Lap belts, while effective against ejection, would provide only a portion of the benefits of passenger frontal crash protection as lap/shoulder belts. Further, test data also leads NHTSA to believe that certain types of injuries would be far more severe if passenger seats only were equipped with lap belts, rather than lap/shoulder belts. In addition, data indicate that motorists are more inclined to use lap/shoulder belts than lap-only belts. These points are discussed below.

Real world data on light vehicles has led the agency to require lap/shoulder belts rather than lap belts in as many seating positions in light vehicles as practical. Both light vehicle data and sled testing with motorcoach seats show that lap belts are not as effective as lap/shoulder belts in reducing injuries and fatalities, particularly in frontal impacts. Our analysis in passenger cars of the effectiveness of lap belts in reducing fatalities in frontal impacts was zero, while it was 29 percent for lap/shoulder belts.

Testing done in NHTSA's motorcoach test program found that lap/shoulder belts in forward-facing seats prevented elevated head and neck injury values and provided enhanced occupant protection compared to lap belts. In the VRTC full-scale motorcoach crash, the lap/shoulder-belted dummies exhibited the lowest injury measures and improved kinematics, with low head and neck injury measures and little movement outside the seating, compared to the lap-belted dummies and unbelted dummies.

In the VRTC sled tests of lap/shoulder-belted dummies—

- Average HIC and Nij values were low for all dummy sizes and below those seen in unbelted and lap-belted sled tests. This was consistent with the lap/shoulder belt results from the full scale crash test.
- Lap/shoulder belts retained the dummies in their seating positions and were able to mitigate head contact with the seat in front.
- When lap/shoulder-belted dummies were subject to loading (of their seats) by an aft unbelted dummy, there was additional forward excursion of the lap/shoulder-belted dummies, but the resulting average head injury measures were still relatively low in most cases, even with head contact with the seat in front in some cases.

In the FRIA (see Table V–6 of the FRIA) accompanying this final rule, we highlight the average injury measurements from two sled tests conducted with lap-belted 5th percentile adult female and 50th percentile adult male dummies. Two crash pulses were utilized in these sled tests, the VRTC pulse and the EU pulse. Both tests were conducted with no rear occupants. Table V–6 of the FRIA shows the average dummy response in the lap belted sled tests. In every instance, the dummies exceeded the head and neck IARVs when the dummies were lap belted.

In contrast to the lap/shoulder-belted dummies, the sled test results for lap only dummies showed—

- HIC and Nij measures exceeded the IARVs for virtually all the dummies tested (there was a 50th percentile male dummy which measured a HIC of 696 (99 percent of the IARV limit)).
- The poor performance of the lap belt restraint in the sled tests was consistent with the lap belt results from the full scale motorcoach crash test.

In the FRIA (see Figure V–17 of the FRIA), we compare the average HIC_{15} and Nij values for the 5th percentile adult female and 50th percentile adult male dummy sizes in the sled testing program, as a means to compare the relative performance of each restraint strategy (unbelted, lap belts, and lap/shoulder belts). Figure V–17 of the FRIA shows that the lowest average HIC and Nij values were associated with the lap/shoulder belt restraint for both dummy sizes. The lower HIC_{15} and Nij values for the lap/shoulder restraint condition are consistent with the dummy kinematics, which indicated that the lap/shoulder belt restraint limited head contact with the forward seat back, particularly for the 5th percentile adult female dummies. In contrast, most of the average injury measures for the lap belt restraint condition were at or above the IARVs. In the sled tests, lap belts resulted in more injuries than being unrestrained, while lap/shoulder belts were the most effective restraint strategy. We also note that, while in the test program we did not measure risk of abdominal injuries, abdominal injuries have been shown to be a problem with lap belts.[153] All this information overwhelmingly shows that lap/shoulder belts would provide more safety benefits to occupants on the affected buses than lap-only belts.

There is also a difference between the restraint systems in terms of estimated belt use rates. In the FRIA, NHTSA estimates that the breakeven point for lap belt use is 2–3 percent, and for lap/shoulder belt use the breakeven point is 4–5 percent (a difference of 2 percentage points). The agency has found that lap/shoulder belt usage is 10 percentage points higher than lap belt usage in the rear seat of passenger cars. Assuming that this relationship would hold for the covered buses, the information indicates that lap/shoulder belts would also be more cost effective than lap belts.

Alternative Anchorage Strength Requirements

In an earlier section of this preamble, NHTSA discussed its decision that the lap/shoulder belt anchorages (and the seat structure itself) must meet FMVSS No. 210 requirements. We sought comment on the alternative of applying the requirements of ECE R.14 and ECE R.80 rather than FMVSS No. 210.

As the agency does in all its FMVSS rulemaking, in developing this final rule NHTSA considered international standards for harmonization purposes. The agency thus reviewed regulations issued by Australia and Japan. In Australia, buses with 17 or more seats and with GVWRs greater than or equal to 3,500 kg (7,716 lb) must comply with ADR 68 (Occupant Protection in Buses). The ADR 68 anchorage test specifies

[153] Morgan, June 1999, ''Effectiveness of Lap/Shoulder Belts in the Back Outboard Seating Positions,'' Washington, DC, National Highway Traffic Safety Administration.

simultaneous application of loading from the belted occupant, the unbelted occupant in the rear (applied to the seat back), and the inertial seat loading from a 20 g crash pulse. We estimate that the ADR 68 anchorage test would result in significantly greater (1.5 times higher) anchorage loads than those measured in our sled tests. In addition, the maximum deceleration in our 48 km/h (30 mph) motorcoach crash test was only 13 g compared to the 20 g specified for inertial seat loading in ADR 68. For these reasons, NHTSA decided not to further consider ADR 68. NHTSA decided against further consideration of Japan's regulation because Japan requires lap belts, and as explained above, the agency has concluded that lap belts are not a reasonable alternative.

NHTSA has compared ECE R.14 and ECR R.80 to FMVSS No. 210 to see if the ECE regulations offer greater benefits than FMVSS No. 210. Our sled and static testing indicated that ECE R.14/ECE R.80 regulations do not provide the level of seat belt anchorage strength required for the foreseeable frontal crash scenario represented by a 48 km/h (30 mph) barrier impact. The static load requirements for ECE R.14 and ECE R.80 are far below that required to generate the peak seat anchorage loads that NHTSA measured in its sled tests, which means a seat that minimally meets the ECE required static loads for M3 vehicles may separate from its floor anchorages in a crash, especially in a severe frontal crash where tri-loading of the seat occurs.

We have also compared ECE R.14 and ECR R.80 to FMVSS No. 210 to see if the ECE regulations offer less costs than FMVSS No. 210. The information from the seat manufacturers indicate that meeting ECE R.14 and R.80 would not necessarily result in cost or weight savings. Seat supplier IMMI stated that its own review determined that meeting ECE R.14 would result in minor material reductions compared to a seat meeting FMVSS No. 210, resulting in minimal savings per seat assembly. U.S. seat suppliers C.E. White and IMMI and possibly others already have established their structural concepts and production to meet FMVSS No. 210. For these reasons, we have decided to adopt FMVSS No. 210 and not the ECE standards.

XX. Overview of Costs and Benefits

Based on FARS data 2000–2009, annually there were 20.9 fatalities and 7,934 injuries to occupants of covered buses. We estimate that installing lap/shoulder seat belts on new covered buses will save 1.7–9.2 lives and prevent 146–858 injuries (3.46–25.17 equivalent lives), depending upon the usage of lap/shoulder belts in the vehicles (Table 9).[154] The cost of adding lap/shoulder belts will be approximately $2,101 per vehicle. Lifetime fuel costs due to an increased weight of the bus will be an additional cost of $794 to $1,077 (estimated in Table 10 below). Total costs are estimated to range from $6.4 to $8.6 million for the 2,200 buses sold per year (all costs are in $2008). The cost per equivalent life saved is estimated to range from $0.3 million to $1.8 million (Table 11).

TABLE 9—ESTIMATED BENEFITS OF FINAL RULE

Fatalities	1.7 to 9.2.
AIS 1 Injuries (Minor)	89 to 536.
AIS 2–5 (Moderate to Severe).	57 to 322.
Total Non-fatal Injuries.	146 to 858.

TABLE 10—ESTIMATED COSTS OF FINAL RULE

[in $2008]

	Per average vehicle	Total fleet ($Millions)
Bus Driver	$7.54	$0.02
Bus Passenger	2,094	4.6
Fuel Costs @ 3%	1,077	2.4
Fuel Costs @ 7%	794	1.7
New Vehicle and Fuel Costs		
@ 3%	3,178	7.0
@ 7%	2,895	6.4

TABLE 11—COSTS PER EQUIVALENT LIFE SAVED

Cost per equivalent life saved	3% to 7% discount rate
50% Belt use for drivers and 15% Belt usage for passengers	$1.5 to $1.8 mill.
83% Belt usage	$0.3 to $0.3 mill.
Breakeven point in passenger belt usage	4 to 5%.

TABLE 12—ANNUALIZED COSTS AND BENEFITS

[In millions of $2008 dollars]

	Annualized costs	Annualized benefits	Net benefits
3% Discount Rate	$7.0	$28.5–158.6	$21.5 to 151.6.
7% Discount Rate	6.4	21.8–121.1	15.4 to 114.7.

The cost of installing lap/shoulder belts on new buses is estimated as follows. For the driver, the difference in costs between a lap belt only and a lap/shoulder belt at the driver seating position is approximately $18.86.[155] This cost includes the difference in cost between a lap and lap/shoulder belt. About 60 percent of the driver positions currently have lap/shoulder belts, thus adding a shoulder belt to the driver seat for 40 percent of the large buses will add an average of $7.54 per bus. For the passenger seats, the incremental cost of adding lap/shoulder belts and to change the seat anchorages for a two passenger seat is $78.14 ($39.07 per seating position). On a 54-passenger bus, the cost for the passenger seats is $2,109.78 ($39.07 × 54). On a 45-passenger bus, the incremental cost of adding lap/shoulder belts and to change the seat anchorages $1,758.15 ($39.07 × 45). A sales weighted average of those buses results in the estimate of $2,094 per average covered bus. The agency has also estimated increased costs in fuel usage. The increased fuel costs depend on added weight (estimated to be 73 kg (161 lb) [156]) and the discount rate used. NHTSA estimates the increased costs in fuel usage for added weight and discounts the additional fuel used over the lifetime of the bus using a 3 percent and 7 percent discount rate. See the FRIA for more details.

XXI. Rulemaking Analyses and Notices

Executive Order 12866, Executive Order 13563, and DOT Regulatory Policies and Procedures

The agency has considered the impact of this rulemaking action under Executive Orders 12866 and 13563 and the Department of Transportation's regulatory policies and procedures (44 FR 11034; February 26, 1979) and determined that it is economically ''significant'' under those documents. This final rule also satisfies a Congressional mandate set forth in the Motorcoach Enhanced Safety Act of 2012, and thus relates to a matter of substantial Congressional and public interest. Accordingly, the action was reviewed under the Executive Order 12866. NHTSA has prepared a FRIA for this final rule.[157]

We estimate that installing lap/shoulder belts on new covered buses will save approximately 1.7 to 9.2 lives and prevent 146 to 858 injuries per year, depending on the usage of lap/shoulder belts in the buses. We estimate that total cost of adding lap/shoulder belts, changing the anchorages and reinforcing the floor is approximately $2,101. The agency has also estimated increased costs in fuel usage. The cost per equivalent life saved is estimated to be $0.3 million to $1.8 million.

The benefits, costs, and other impacts of this rulemaking are summarized in the immediately preceding section of this preamble and discussed at length in the FRIA.

Cumulative Effect of Regulations

Consistent with Executive Order 13563 and the Vehicle Safety Act, we have considered the cumulative effects of the new regulations stemming from NHTSA's 2007 ''NHTSA's Approach to Motorcoach Safety'' plan and DOT's 2009 Motorcoach Safety Action Plan, and have taken steps to identify opportunities to harmonize and streamline those regulations. By coordinating the timing and content of the rulemakings, our goal is to expeditiously maximize the net benefits of the regulations (by either increasing benefits or reducing costs or a combination of the two) while simplifying requirements on the public and ensuring that the requirements are justified. We seek to ensure that this coordination will also simplify the implementation of multiple requirements on a single industry.

NHTSA's Motorcoach Safety Action Plan identified four priority areas—passenger ejection, rollover structural integrity, emergency egress, and fire safety. There have been other initiatives on large bus performance, such as electronic stability control (ESC) systems [158]—an action included in the DOT plan—and an initiative to update the large bus tire standard.[159] In deciding how best to initiate and coordinate rulemaking in these areas, NHTSA examined various factors including the benefits that would be achieved by the rulemakings, the anticipated vehicle designs and countermeasures needed to comply with the regulations, and the extent to which the timing and content of the rulemakings could be coordinated to lessen the need for multiple redesign and to lower overall costs. After this examination, we decided on a course of action that prioritized the goal of reducing passenger ejection and increasing frontal impact protection because many benefits could be achieved expeditiously with countermeasures that were readily available (using bus seats with integral lap/shoulder seat belts, which are already available from seat suppliers) and whose installation would not significantly impact other vehicle designs. Similarly, we have also determined that an ESC rulemaking would present relatively few synchronization issues with other rules, since the vehicles at issue already have the foundation braking systems needed for the stability control technology, and the additional equipment to realize ESC are sensors that are already available and that can be installed without significant impact on other vehicle systems. Further, we estimate that 80 percent of the affected buses already have ESC systems. We realize that a rollover structural integrity rulemaking, or an emergency egress rulemaking, could involve more redesign of vehicle structure than rules involving systems such as seat belts, ESC, or tires.[160] Our decision-making in these and all the rulemakings outlined in the ''NHTSA's Approach to Motorcoach Safety'' plan, DOT's Motorcoach Safety Action Plan, and the Motorcoach Enhanced Safety Plan will be cognizant of the timing and content of the actions so as to simplify requirements applicable to the public and private sectors, ensure that requirements are justified, and increase the net benefits of the resulting safety standards.

Section 32706 of the Motorcoach Enhanced Safety Act directs the Secretary to consider, if DOT undertakes separate rulemaking proceedings, whether each added aspect of rulemaking may contribute to addressing the safety need determined to require rulemaking and the benefits obtained through this safety belt rulemaking, and to avoid duplicative benefits, costs, and countermeasures. NHTSA has and will consider these

[154] The FRIA assumes that the seat belt use rate on the affected buses will be between 15 percent and the percent use in passenger vehicles, which was 83 percent in 2008. These annual benefits would accrue when all affected buses in the fleet have lap/shoulder belts.

[155] ''Cost and Weight Added by the Federal Motor Vehicle Safety Standards for Model Years 1968–2001 in Passenger Cars and Light Trucks,'' December 2004, DOT HS 809 834, Pages 81 and 88.

[156] See FRIA. This estimate is based on results from a NHTSA contractor conducting cost/weight teardown studies of affected bus seats. The weight added by lap/shoulder belts was 2.70 kg (5.96 lb) per 2-person seat. This is the weight only of the seat belt assembly itself and does not include changing the design of the seat, reinforcing the floor, walls or other areas of the bus. The final cost and weight results from the study are in the docket for the NPRM.

[157] NHTSA's FRIA is available in the docket for this final rule and may be obtained by downloading it or by contacting Docket Management at the address or telephone number provided at the beginning of this document.

[158] 77 FR 30766, May 23, 2012.

[159] 75 FR 60037; September 29, 2010.

[160] The initiative on fire safety is in a research phase. Rulemaking resulting from the research will not occur in the near term.

factors so as to avoid duplicative benefits, costs, and countermeasures.

Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 et seq., as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). The Small Business Administration's regulations at 13 CFR Part 121 define a small business, in part, as a business entity ''which operates primarily within the United States.'' (13 CFR 121.105(a)). No regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

NHTSA has considered the effects of this rulemaking action under the Regulatory Flexibility Act. According to 13 CFR 121.201, the Small Business Administration's size standards regulations used to define small business concerns, manufacturers affected today would fall under North American Industry Classification System (NAICS) No. 336111, *Automobile Manufacturing,* which has a size standard of 1,000 employees or fewer. NHTSA estimates that there are 20 manufacturers of buses subject to this rulemaking, and that approximately 9 of these manufacturers are considered small businesses (these include second-stage manufacturers).

For the reasons discussed below, I certify that this final rule will not have a significant economic impact on a substantial number of small entities. The agency estimates that the average incremental costs to each bus will be $2,101 per unit to meet this final rule. This incremental cost does not constitute a significant impact given that the average cost of the buses subject to this rulemaking ranges from $200,000 to $500,000. Further, these incremental costs, which are very small compared to the overall cost of the bus, can ultimately be passed on to the bus purchaser and/or persons purchasing tickets or chartering the bus's services. In addition, certifying that their buses comply with the safety requirements adopted today will not have a significant economic impact on the manufacturers. Small manufacturers are already certifying their bus's compliance with FMVSS No. 207's seat strength requirements (driver's seat), FMVSS No. 208's occupant crash protection requirements applying to the driver's seating position, and the FMVSS No. 210 seat belt anchorage strength requirements for the driver's seating position. The methodology that is used to certify to today's requirements is a relatively simple static pull test, the same or similar to the tests currently applying to small manufacturers to certify compliance with FMVSS Nos. 207, 208 and 210 for the driver's seating position.

Small manufacturers have many options available to certify compliance, none of which will result in a significant economic impact on these entities. Bus manufacturers typically obtain seating systems from seat suppliers and install the seats on the bus body. Seat suppliers currently offer bus seats with lap/shoulder belts integral to the seats. As a result of this final rule, the bus manufacturers will be able to order passenger seats with lap/shoulder belts from the same suppliers, just as they do today. Seat suppliers (which are large businesses) offer technical assistance to the bus manufacturer regarding installation of the seats and testing to the FMVSSs.[161] The small bus manufacturer can certify compliance with the requirements adopted today using the information and instruction provided by the seat supplier. (Note also that the performance requirements of today's final rule involve a simple static pull test.)

For small bus manufacturers that wish to perform their own testing, there are several options available. One option is to ''section'' the vehicle or otherwise obtain a body section representative of the vehicle, install the seat in the section as they would in the actual full vehicle, and test the seat assembly to the FMVSS No. 210 pull test. This is basically the approach that VRTC used in NHTSA's motorcoach seat belt research program. The bus manufacturer could base its certification on these tests, without testing a full vehicle. The manufacturer could also test a bus that is not completely new. A manufacturer could test seating systems installed on an old bus chassis or other underlying structure, and could sufficiently assess the ability of the seating system to meet today's requirements.

Moreover, a small manufacturer is not required to conduct actual testing. It can certify compliance by using modeling and engineering analyses. Unlike NHTSA, manufacturers certifying compliance of their own vehicles have more detailed information regarding their own vehicles and can use reasonable engineering analyses to determine whether their vehicles will comply with the requirements. A small manufacturer is closely familiar with its vehicle design and can use modeling and relevant analyses on a vehicle-by-vehicle basis to reasonably predict whether its bus design will meet the requirements of today's rule.

We also note that the product cycle of the covered buses is significantly longer than other vehicle types. With a longer product cycle, we believe that the costs of certification for manufacturers would be further reduced as the costs of conducting compliance testing and the relevant analyses could be spread over a significantly longer period of time.

We note that today's rule may affect small businesses as purchasers of the affected buses, but this is an indirect effect. Moreover, as mentioned above, we anticipate that the impact on these businesses will not be significant because the expected price increase of the buses used by these businesses is ($2,101 for each bus valued between $200,000 and $500,000). While fuel costs for these businesses will increase between $794 and $1,077 (in 2008 dollars) per bus over the lifetime of the bus, these expected increases in costs are small in comparison to the cost of each vehicle. We further anticipate that these costs will equally affect all operators of the covered buses and thus small operators will be able to pass these costs onto their consumers.

Executive Order 13132 (Federalism)

NHTSA has examined today's final rule pursuant to Executive Order 13132 (64 FR 43255, August 10, 1999) and concluded that no additional consultation with States, local governments or their representatives is mandated beyond the rulemaking process. The agency has concluded that the rulemaking will not have sufficient federalism implications to warrant consultation with State and local officials or the preparation of a federalism summary impact statement.

[161] See *http://www.cewhite.com/testing-lab* (''The entire testing program is FREE for our customers''), see also *http://www.freedmanseating.com/fstl/*) (''We Provide . . . FMVSS/CMVSS 207, 210, and 225 Testing . . . Special Tests Performed Per Client's Specifications'') [Web sites last accessed February 1, 2012]. IMMI indicated in its comments that it also assists in the testing of buses using its seats.

The final rule will not have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

NHTSA rules can preempt in two ways. First, the National Traffic and Motor Vehicle Safety Act contains an express preemption provision: When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter. 49 U.S.C. 30103(b)(1). It is this statutory command by Congress that preempts any non-identical State legislative and administrative law addressing the same aspect of performance.

The express preemption provision described above is subject to a savings clause under which ''[c]ompliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.'' 49 U.S.C. 30103(e) Pursuant to this provision, State common law tort causes of action against motor vehicle manufacturers that might otherwise be preempted by the express preemption provision are generally preserved. However, the Supreme Court has recognized the possibility, in some instances, of implied preemption of such State common law tort causes of action by virtue of NHTSA's rules, even if not expressly preempted. This second way that NHTSA rules can preempt is dependent upon there being an actual conflict between an FMVSS and the higher standard that would effectively be imposed on motor vehicle manufacturers if someone obtained a State common law tort judgment against the manufacturer, notwithstanding the manufacturer's compliance with the NHTSA standard. Because most NHTSA standards established by an FMVSS are minimum standards, a State common law tort cause of action that seeks to impose a higher standard on motor vehicle manufacturers will generally not be preempted. However, if and when such a conflict does exist—for example, when the standard at issue is both a minimum and a maximum standard—the State common law tort cause of action is impliedly preempted. See *Geier v. American Honda Motor Co.,* 529 U.S. 861 (2000).

Pursuant to Executive Order 13132 and 12988, NHTSA has considered whether this final rule could or should preempt State common law causes of action. The agency's ability to announce its conclusion regarding the preemptive effect of one of its rules reduces the likelihood that preemption will be an issue in any subsequent tort litigation.

To this end, the agency has examined the nature (e.g., the language and structure of the regulatory text) and objectives of today's final rule and finds that this final rule, like many NHTSA rules, will prescribe only a minimum safety standard. As such, NHTSA does not intend that this final rule preempt state tort law that would effectively impose a higher standard on motor vehicle manufacturers than that established by today's final rule. Establishment of a higher standard by means of State tort law will not conflict with the minimum standard final here. Without any conflict, there could not be any implied preemption of a State common law tort cause of action.

National Environmental Policy Act

NHTSA has analyzed this final rule for the purposes of the National Environmental Policy Act. The agency has determined that implementation of this action will not have any significant impact on the quality of the human environment.

Paperwork Reduction Act

Under the procedures established by the Paperwork Reduction Act of 1995, a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid OMB control number. This rulemaking does not establish any new information collection requirements.

National Technology Transfer and Advancement Act

Under the National Technology Transfer and Advancement Act of 1995 (NTTAA) (Pub. L. 104–113), ''all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments.'' After carefully reviewing the available information, including standards from the European Union, Australia and Japan, NHTSA has determined that there are no voluntary consensus standards that we will be incorporating into this rulemaking. The reasons the agency has decided against adopting the international regulations regarding the performance of seat belt anchorages were discussed earlier in this preamble.

Executive Order 12988

With respect to the review of the promulgation of a new regulation, section 3(b) of Executive Order 12988, ''Civil Justice Reform'' (61 FR 4729, February 7, 1996) requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect; (2) clearly specifies the effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct, while promoting simplification and burden reduction; (4) clearly specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. This document is consistent with that requirement.

Pursuant to this Order, NHTSA notes as follows.

The issue of preemption is discussed above in connection with E.O. 13132. NHTSA notes further that there is no requirement that individuals submit a petition for reconsideration or pursue other administrative proceeding before they may file suit in court.

Unfunded Mandates Reform Act

The Unfunded Mandates Reform Act of 1995 requires agencies to prepare a written assessment of the costs, benefits and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local or tribal governments, in the aggregate, or by the private sector, of more than $100 million annually (adjusted for inflation with base year of 1995). This final rule will not result in expenditures by State, local or tribal governments, in the aggregate, or by the private sector in excess of $100 million annually.

Executive Order 13211

Executive Order 13211 (66 FR 28355, May 18, 2001) applies to any rulemaking that: (1) Is determined to be economically significant as defined under E.O. 12866, and is likely to have a significantly adverse effect on the supply of, distribution of, or use of energy; or (2) that is designated by the Administrator of the Office of Information and Regulatory Affairs as a significant energy action. This rulemaking is not subject to E.O. 13211.

Plain Language

Executive Order 12866 and E.O. 13563 require regulations to be written in a manner that is simple and easy to understand. Application of the principles of plain language includes

consideration of the following questions:

- Have we organized the material to suit the public's needs?
- Are the requirements in the rule clearly stated?
- Does the rule contain technical language or jargon that isn't clear?
- Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand?
- Would more (but shorter) sections be better?
- Could we improve clarity by adding tables, lists, or diagrams?
- What else could we do to make the rule easier to understand?

If you have any responses to these questions, please write us.

Regulation Identifier Number (RIN)

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

Privacy Act

Anyone is able to search the electronic form of all submissions to any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78).

List of Subjects in 49 CFR Part 571

Imports, Motor vehicle safety, Motor vehicles, and Tires.

In consideration of the foregoing, NHTSA amends 49 CFR part 571 as set forth below.

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

■ 1. The authority citation for Part 571 is amended to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117 and 30166; delegation of authority at 49 CFR 1.95.

■ 2. Section 571.208 is amended by revising S4.4, S4.5.5.1(a) and S4.5.5.1(b), the introductory text of S4.5.5.2(a), the introductory text of S4.5.5.2(b), and the introductory text of S7.1.1.5; and adding S7.1.6, to read as follows:

§ 571.208 Standard No. 208; Occupant crash protection.

* * * * *

S4.4 Buses manufactured on or after November 28, 2016.

S4.4.1 *Definitions.* For purposes of S4.4, the following definitions apply:

Over-the-road bus means a bus characterized by an elevated passenger deck located over a baggage compartment, except a school bus.

Perimeter-seating bus means a bus with 7 or fewer designated seating positions rearward of the driver's seating position that are forward-facing or can convert to forward-facing without the use of tools and is not an over-the-road bus.

Prison bus means a bus manufactured for the purpose of transporting persons subject to involuntary restraint or confinement and has design features consistent with that purpose.

Stop-request system means a vehicle-integrated system for passenger use to signal to a vehicle operator that they are requesting a stop.

Transit bus means a bus that is equipped with a stop-request system sold for public transportation provided by, or on behalf of, a State or local government and that is not an over-the-road bus.

S4.4.2 *Buses with a GVWR of 3,855 kg (8,500 lb) or less and an unloaded vehicle weight of 2,495 kg (5,500 lb) or less.*

S4.4.2.1 Each bus with a GVWR of 3,855 kg (8,500 lb) or less and an unloaded vehicle weight of 2,495 kg (5,500 lb) or less, except a school bus, shall comply with the requirements of S4.2.6 of this standard for front seating positions and with the requirements of S4.4.3.1 of this standard for all rear seating positions.

S4.4.2.2 Each school bus with a GVWR of 3,855 kg (8,500 lb) or less and an unloaded vehicle weight of 2,495 kg (5,500 lb) or less shall comply with the requirements of S4.2.6 of this standard for front seating positions and with the requirements of S4.4.3.2 of this standard for all rear seating positions.

S4.4.3 *Buses with a GVWR of 4,536 kg (10,000 lb) or less.*

S4.4.3.1 Except as provided in S4.4.3.1.1, S4.4.3.1.2, S4.4.3.1.3, S4.4.3.1.4 and S4.4.3.1.5, each bus with a gross vehicle weight rating of 4,536 kg (10,000 lb) or less, except a school bus or an over-the-road bus, shall be equipped with a Type 2 seat belt assembly at every designated seating position other than a side-facing position. Type 2 seat belt assemblies installed in compliance with this requirement shall conform to Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. If a Type 2 seat belt assembly installed in compliance with this requirement incorporates a webbing tension relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension relieving device, and the vehicle shall conform to S7.4.2(c) of this standard. Side-facing designated seating positions shall be equipped, at the manufacturer's option, with a Type 1 or Type 2 seat belt assembly.

S4.4.3.1.1 Any rear designated seating position with a seat that can be adjusted to be forward- or rear-facing and to face some other direction shall either:

(a) Meet the requirements of S4.4.3.1 with the seat in any position in which it can be occupied while the vehicle is in motion, or meet S4.4.3.1.1(b)(1) and S4.4.3.1.1(b)(2).

(b)(1) When the seat is in its forward-facing and/or rear-facing position, or within ±30 degrees of either position, have a Type 2 seat belt assembly with an upper torso restraint that

(i) Conforms to S7.1 and S7.2 of this standard,

(ii) Adjusts by means of an emergency locking retractor conforming to Standard No. 209 (49 CFR 571.209), and

(iii) May be detachable at the buckle or upper anchorage, but not both.

(2) When the seat is in any position in which it can be occupied while the vehicle is in motion, have a Type 1 seat belt or the pelvic portion of a Type 2 seat belt assembly that conforms to S7.1 and S7.2 of this standard.

S4.4.3.1.2 Any rear designated seating position on a readily removable seat (that is, a seat designed to be easily removed and replaced by means installed by the manufacturer for that purpose) may meet the requirements of S4.4.3.1 by use of a belt incorporating a release mechanism that detaches both the lap and shoulder portion at either the upper or lower anchorage point, but not both. The means of detachment shall be a key or key-like object.

S4.4.3.1.3 Any inboard designated seating position on a seat for which the entire seat back can be folded such that no part of the seat back extends above a horizontal plane located 250 mm above the highest SRP located on the seat may meet the requirements of S4.4.3.1 by use of a belt incorporating a release mechanism that detaches both the lap and shoulder portion at either the upper or lower anchorage point, but not both. The means of detachment shall be a key or key-like object.

S4.4.3.1.4 Any rear designated seating position adjacent to a walkway located between the seat, which

walkway is designed to allow access to more rearward designated seating positions, and not adjacent to the side of the vehicle may meet the requirements of S4.4.3.1 by use of a belt incorporating a release mechanism that detaches both the lap and shoulder portion at either the upper or lower anchorage point, but not both. The means of detachment shall be a key or key-like object.

S4.4.3.1.5 Any rear side-facing designated seating position shall be equipped with a Type 1 or Type 2 seat belt assembly that conforms to S7.1 and S7.2 of this standard.

S4.4.3.2 Each school bus with a gross vehicle weight rating of 4,536 kg (10,000 pounds) or less shall comply with the requirements of S4.4.3.2.1 and S4.4.3.2.2.

S4.4.3.2.1 The driver's designated seating position and any outboard designated seating position not rearward of the driver's seating position shall be equipped with a Type 2 seat belt assembly. The seat belt assembly shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. The lap belt portion of the seat belt assembly shall include either an emergency locking retractor or an automatic locking retractor. An automatic locking retractor shall not retract webbing to the next locking position until at least ¾; inch of webbing has moved into the retractor. In determining whether an automatic locking retractor complies with this requirement, the webbing is extended to 75 percent of its length and the retractor is locked after the initial adjustment. If the seat belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension-relieving device, and the vehicle shall comply with S7.4.2(c) of this standard.

S4.4.3.2.2 Passenger seating positions, other than any outboard designated seating position not rearward of the driver's seating position, shall be equipped with Type 2 seat belt assemblies that comply with the requirements of S7.1.1.5, S7.1.5 and S7.2 of this standard.

S4.4.3.3 Each over-the-road-bus with a GVWR of 4,536 kg (10,000 lb) or less shall meet the requirements of S4.4.5.1 (as specified for buses with a GVWR or more than 11,793 kg (26,000 lb)).

S4.4.4 *Buses with a GVWR of more than 4,536 kg (10,000 lb) but not greater than 11,793 kg (26,000 lb).*

S4.4.4.1 Each bus with a GVWR of more than 4,536 kg (10,000 lb) but not greater than 11,793 kg (26,000 lb), except a school bus or an over-the-road bus, shall meet the requirements of S4.4.4.1.1 or S4.4.4.1.2.

S4.4.4.1.1 *First option—complete passenger protection system—driver only.* The vehicle shall meet the crash protection requirements of S5, with respect to an anthropomorphic test dummy in the driver's designated seating position, by means that require no action by vehicle occupants.

S4.4.4.1.2 *Second option—belt system—driver only.* The vehicle shall, at the driver's designated seating position, be equipped with either a Type 1 or a Type 2 seat belt assembly that conforms to § 571.209 of this part and S7.2 of this Standard. A Type 1 belt assembly or the pelvic portion of a dual retractor Type 2 belt assembly installed at the driver's seating position shall include either an emergency locking retractor or an automatic locking retractor. If a seat belt assembly installed at the driver's seating position includes an automatic locking retractor for the lap belt or the lap belt portion, that seat belt assembly shall comply with the following:

(a) An automatic locking retractor used at a driver's seating position that has some type of suspension system for the seat shall be attached to the seat structure that moves as the suspension system functions.

(b) The lap belt or lap belt portion of a seat belt assembly equipped with an automatic locking retractor that is installed at the driver's seating position must allow at least ¾; inch, but less than 3 inches, of webbing movement before retracting webbing to the next locking position.

(c) Compliance with S4.4.4.2.1(b) of this standard is determined as follows:

(1) The seat belt assembly is buckled and the retractor end of the seat belt assembly is anchored to a horizontal surface. The webbing for the lap belt or lap belt portion of the seat belt assembly is extended to 75 percent of its length and the retractor is locked after the initial adjustment.

(2) A load of 20 pounds is applied to the free end of the lap belt or the lap belt portion of the belt assembly (i.e., the end that is not anchored to the horizontal surface) in the direction away from the retractor. The position of the free end of the belt assembly is recorded.

(3) Within a 30 second period, the 20 pound load is slowly decreased, until the retractor moves to the next locking position. The position of the free end of the belt assembly is recorded again.

(4) The difference between the two positions recorded for the free end of the belt assembly shall be at least ¾; inch but less than 3 inches.

S4.4.4.2 Each school bus with a GVWR of more than 4,536 kg (10,000 lb) but not greater than 11,793 kg (26,000 lb) shall be equipped with a Type 2 seat belt assembly at the driver's designated seating position. The seat belt assembly shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. If a seat belt assembly installed in compliance with this requirement includes an automatic locking retractor for the lap belt portion, that seat belt assembly shall comply with paragraphs (a) through (c) of S4.4.4.1.2 of this standard. If a seat belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension-relieving device, and the vehicle shall comply with S7.4.2(c) of this standard.

S4.4.4.3 Each over-the-road-bus with a GVWR of more than 4,536 kg (10,000 lb) but not greater than 11,793 kg (26,000 lb) shall meet the requirements of S4.4.5.1 (as specified for buses with a GVWR or more than 11,793 kg (26,000 lb)).

S4.4.5 *Buses with a GVWR of more than 11,793 kg (26,000 lb).*

S4.4.5.1 Each bus with a GVWR of more than 11,793 kg (26,000 lb), except a perimeter-seating bus, transit bus, or school bus, shall comply with the requirements of S4.4.5.1.1 and S4.4.5.1.2.

S4.4.5.1.1 The driver's designated seating position and any outboard designated seating position not rearward of the driver's seating position shall be equipped with a Type 2 seat belt assembly. The seat belt assembly shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. If a seat belt assembly installed in compliance with this requirement includes an automatic locking retractor for the lap belt portion, that seat belt assembly shall comply with paragraphs (a) through (c) of S4.4.4.1.2 of this standard. If a seat belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension-relieving device, and the vehicle shall comply with S7.4.2(c) of this standard.

S4.4.5.1.2 Passenger seating positions, other than any outboard designated seating position not rearward of the driver's seating position and seating positions on prison buses

rearward of the driver's seating position, shall:

(a) Other than for over-the-road buses:

(i) Be equipped with a Type 2 seat belt assembly at any seating position that is not a side-facing position;

(ii) Be equipped with a Type 1 or Type 2 seat belt assembly at any seating position that is a side-facing position;

(c) For over-the-road buses, be equipped with a Type 2 seat belt assembly;

(d) Have the seat belt assembly attached to the seat structure at any seating position that has another seating position, wheelchair position, or side emergency door behind it; and

(e) Comply with the requirements of S7.1.1.5, S7.1.3, S7.1.6 and S7.2 of this standard.

S4.4.5.2 Each perimeter-seating bus and transit bus with a GVWR of more than 11,793 kg (26,000 lb) shall meet the requirements of S4.4.4.1.1 or S4.4.4.1.2 (as specified for buses with a GVWR of more than 4,536 kg (10,000 lb) but not greater than 11,793 kg (26,000 lb)).

S4.4.5.3 Each school bus with a GVWR of more than 11,793 kg (26,000 lb) shall be equipped with a Type 2 seat belt assembly at the driver's designated seating position. The seat belt assembly shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. If a seat belt assembly installed in compliance with this requirement includes an automatic locking retractor for the lap belt portion, that seat belt assembly shall comply with paragraphs (a) through (c) of S4.4.4.1.2 of this standard. If a seat belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension-relieving device, and the vehicle shall comply with S7.4.2(c) of this standard.

* * * * *

S4.5.5.1 *Vehicles manufactured on or after September 1, 2005 and before September 1, 2007.*

(a) For vehicles manufactured for sale in the United States on or after September 1, 2005, and before September 1, 2007, a percentage of the manufacturer's production as specified in S4.5.5.2, shall meet the requirements specified in either S4.1.5.5 for complying passenger cars, S4.2.7 for complying trucks and multipurpose passenger vehicles, or S4.4.3.1 for complying buses.

(b) A manufacturer that sells two or fewer carlines, as that term is defined at 49 CFR 583.4, in the United States may, at the option of the manufacturer, meet the requirements of this paragraph, instead of paragraph (a) of this section. Each vehicle manufactured on or after September 1, 2006, and before September 1, 2007, shall meet the requirements specified in S4.1.5.5 for complying passenger cars, S4.2.7 for complying trucks & multipurpose passenger vehicles, and S4.4.3.1 for complying buses. Credits for vehicles manufactured before September 1, 2006 are not to be applied to the requirements of this paragraph.

* * * * *

S4.5.5.2 *Phase-in schedule.*

(a) Vehicles manufactured on or after September 1, 2005, and before September 1, 2006. Subject to S4.5.5.3(a), for vehicles manufactured on or after September 1, 2005, and before September 1, 2006, the amount of vehicles complying with S4.1.5.5 for complying passenger cars, S4.2.7 for complying trucks and multipurpose passenger vehicles, or S4.4.3.1 for complying buses shall be not less than 50 percent of:

* * *

(b) Vehicles manufactured on or after September 1, 2006, and before September 1, 2007. Subject to S4.5.5.3(b), for vehicles manufactured on or after September 1, 2006, and before September 1, 2007, the amount of vehicles complying with S4.1.5.5 for complying passenger cars, S4.2.7 for complying trucks and multipurpose passenger vehicles, or S4.4.3.1 for complying buses shall be not less than 80 percent of:

* * * * *

S7.1.1.5 Passenger cars, and trucks, buses, and multipurpose passenger vehicles with a GVWR of 4,536 kg (10,000 lb) or less manufactured on or after September 1, 1995 and buses with a GVWR of more than 11,793 kg (26,000 pounds) manufactured on or after November 28, 2016, except a perimeter-seating bus, prison bus, school bus, or transit bus, shall meet the requirements of S7.1.1.5(a), S7.1.1.5(b) and S7.1.1.5(c).

* * *

S7.1.6 *Passenger seats, other than any outboard designated seating position not rearward of the driver's seating position, in buses with a GVWR of more than 11,793 kg (26,000 lb) manufactured on or after* November 28, 2016. The lap belt of any seat belt assembly on any passenger seat in each bus with a GVWR of more than 11,793 kg (26,000 lb), except a perimeter-seating bus, prison bus, school bus, or transit bus, shall adjust by means of any emergency-locking retractor that conforms to 49 CFR 571.209 to fit persons whose dimensions range from those of a 50th percentile 6-year-old child to those of a 95th percentile adult male and the upper torso restraint shall adjust by means of an emergency-locking retractor that conforms to 49 CFR 571.209 to fit persons whose dimensions range from those of a 5th percentile adult female to those of a 95th percentile adult male, with the seat in any position, the seat back in the manufacturer's nominal design riding position, and any adjustable anchorages adjusted to the manufacturer's nominal design position for a 50th percentile adult male occupant.

* * * * *

■ 3. Section 571.222 is amended by:

■ a. Revising S5(a)(2)(i);

■ b. Removing and reserving S5(b)(1)(ii); and

■ c. Revising S5(b)(1)(iii).

The revisions read as follows:

§ 571.222 Standard No. 222; School bus passenger seating and crash protection.

* * * * *

S5. *Requirements.*

* * * * *

(a) *Large school buses.*

* * *

(2) * * *

(i) S4.4.3.2 of Standard No. 208 (49 CFR 571.208);

* * * * *

(b) *Small school buses.* * * *

(1)

(iii) In the case of vehicles manufactured on or after October 21, 2011 the requirements of S4.4.3.2 of § 571.208 and the requirements of §§ 571.207, 571.209 and 571.210 as they apply to school buses with a gross vehicle weight rating of 4,536 kg or less; and,

* * * * *

Dated: November 19, 2013.

David L. Strickland,

Administrator.

[FR Doc. 2013–28211 Filed 11–20–13; 4:15 pm]

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