

**BMW Group**DEPARTMENT OF  
TRANSPORTATION  
DOCKET OPERATIONS

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The Honorable David L. Strickland, Esq.  
Administrator  
National Highway Traffic Safety Administration  
U.S. Department of Transportation  
1200 New Jersey Ave SE  
Washington, DC 20590-0001

**Re: Petition for Rulemaking to Increase Belted Use Rates and Reduce Governments' Financial Burden**

Dear Administrator Strickland:

On behalf of The BMW Group, BMW of North America, LLC (BMW) hereby submits a petition for rulemaking pursuant to 49 U.S.C. § 30162 and 49 CFR Part 552. As a result of recent Congressional action, BMW requests that the National Highway Traffic Safety Administration (NHTSA) commence rulemaking to amend the current 49 CFR Part 571 Federal Motor Vehicle Safety Standard (FMVSS) No. 208 "Occupant crash protection" to permit an **OEM-optional** certification using a Vehicle-Belt-Interlock (VBI) for front occupants. This has the potential to dramatically increase seatbelt use rates and safety; offer manufacturers increased design freedom for innovative lightweight vehicle concepts, reducing fuel use and emissions; and reduce the financial burden on the US Department of Transportation and individual States involving programs to increase belt use rates.

Executive Summary

- NHTSA's statutory authority has changed due to BMW-initiated action with the U.S. Congress to have Title 49, United States Code, Chapter 301 (Motor Vehicle Safety Act) changed to allow a VBI as an OEM compliance option.
- NHTSA currently allows a manufacturer to have the option to certify the vehicle to different requirements (e.g. FMVSS 202 – Static vs. Dynamic).
- NHTSA's data indicates seatbelts alone save approximately 15,000 lives per year and the VBI has great potential to influence even those highly resistant to seat belt use.
- Protection Trade Off – FMVSS 208 requires unbelted occupant crash protection for front vehicle occupants who choose not to buckle up, limiting potential vehicle design optimization that could improve protection for belted front occupants.

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Amending FMVSS 208 as suggested in this Petition would give OEMs the option to design (and consumers the option to buy) a VBI-equipped vehicle that potentially can deliver a higher level of safety for the front occupants, and can potentially be lighter and more energy efficient.

#### Introduction

FMVSS 202 "Head Restraints" permits a manufacturer to have the option to certify the vehicle to different requirements (e.g. Static vs. Dynamic). This option allows equivalent safety. BMW is requesting NHTSA to amend current FMVSS 208 so manufacturers have the **option** to provide a VBI that will increase safety via increased seatbelt use rates.

In order to evaluate the petition, BMW will discuss the following items:

- Potential Safety Benefits
- Statutory Authority
- Increased Seat Belt Usage
- Additional Benefits
- Interlock Proposals

#### **Potential Safety Benefit: The Value of Seatbelts is Proven Fact**

The performance of a vehicle's occupant restraint system is obviously an important factor in occupant safety. NHTSA's data indicates seatbelts alone save approximately 15,000 lives per year<sup>1</sup> - which according to the NHTSA is more than any other safety technology in a vehicle. NHTSA states that an additional 3,341 lives could potentially have been saved in 2010 if all unrestrained passenger vehicle occupants 5 and older involved in fatal crashes had worn their seat belts.<sup>2</sup> The potential for lives to be saved is much higher (between 9 and 27 times) compared to some of the latest rules published by NHTSA in the last decade (e.g. FMVSS 138 and FMVSS 226).

Based on NHTSA's data, if FMVSS 208 is modified as requested and if OEMs begin to install VBIs in new models, we estimate that hundreds of lives could be saved. Even if there is only a 20% increase in seat belt usage, about 650+ lives could be saved, which is 5 times the number of estimated lives saved by the updated and costly FMVSS 216 "Roof Crush" (estimated at 135 lives). In addition, NHTSA's recent rulemakings have lower estimated benefits for life saving such as FMVSS 226 "Head Occupant Restraint" (estimated 373 lives and prevent 476 serious injuries per year), and FMVSS 138 "Tire Pressure Monitoring Systems" (estimated 119-121 fatalities prevented and 8,373-8,568 injuries prevented).

Table 1 below compares the effectiveness of different FMVSS in reducing fatalities, injuries and crashes. Clearly, the number of lives that could be saved by increasing seatbelt use is significant compared to other evaluated systems.

<sup>1</sup> "Seat Belt Use in 2008—Demographic Results" - DOT HS 811 183 - August 2009

<sup>2</sup> Lives Saved in 2010 by Restraint Use and Minimum Drinking Age Laws - DOT HS 811 580 - February 20' 2

Table 1 – Estimates of Lives Saved by Safety Technologies In 2002<sup>3</sup>

FMVSS	Safety Technology	Car Occupants	LTV Occupants	Pedestrians, Bicyclists & Motorcyclists	TOTAL
105	Dual master cylinders & front disc brakes	288	194	56	538
108	Conspicuity tape for heavy trailers	91	68		159
201	Voluntary mid/lower instrument panel improvements	631	299		930
203/ 204	Energy-absorbing steering assemblies	1,660	997		2,657
206	Improved door locks	704	694		1,398
208	Safety belts – all types, all seat positions	7,699	6,872		14,570
208	Frontal air bags	1,642	831		2,473
212	Adhesive windshield bonding	229	118		347
213	Child safety seats	223	112		335
214	Side door beams & voluntary (pre-1994) TTI(d) reductions	848	146		994
216	Roof crush strength (eliminate true hardtops)	161			161
<b>TOTAL</b>		<b>14,175</b>	<b>10,331</b>	<b>56</b>	<b>24,561</b>

#### The Protection Trade Off

FMVSS 208 requires compliance with unbelted front occupant crash protection criteria to protect vehicle occupants who choose not to buckle up. As a public health organization, it is understood that NHTSA feels obligated to protect even unbelted front occupants. However, NHTSA leadership has frequently explained the Agency's mission to "Do no harm." There are certain vehicle configurations that may result in a reduction of protection to belted front occupants when the restraint system is designed to comply with the unbelted requirements. BMW is currently gathering additional simulation/user acceptability data to share with the NHTSA as confidential business information.

In addition, CAFE and GHG requirements have become increasingly challenging to meet and the benefits trade-off needs to be addressed as soon as possible. In order to assure unbelted performance requirements are met, manufacturers often have to modify interior designs and oversize their restraint systems (i.e. use of larger airbags, knee airbags, additional dashboard padding, etc). This results in added weight and reduced in-vehicle occupant space, negatively affecting fuel economy and GHG emissions. By making the unbelted test an OEM-

<sup>3</sup> "Lives Saved by the Federal Motor Vehicle Safety Standards and Other Vehicle Safety Technologies, 1960-2002" – DOT HS 809 833 – October 2004

option, additional in-vehicle design freedom is granted, potentially resulting in lighter, more spacious and fuel efficient vehicles.

### Statutory Authority

In 1973, when seat belt use was approximately 12%, NHTSA initiated rulemaking requiring new cars to be equipped either with automatic protection or an ignition interlock for both front outboard seating positions. Due to extreme consumer backlash, on October 27, 1974, President Ford signed into law a bill that prohibited any FMVSS from requiring or allowing, as a means of compliance, any seat belt interlock system. The Motor Vehicle Safety Act Section 30124 read:

*"A motor vehicle safety standard prescribed under this chapter may not require or allow a manufacturer to comply with the standard by using a safety belt interlock designed to prevent starting or operating a motor vehicle if an occupant is not using a safety belt."*

NHTSA then published a final rule on October 31, 1974 that deleted the interlock option from FMVSS 208, effective immediately.

In order to allow NHTSA to permit the use of a VBI OEM-option for compliance, BMW initiated action with the Congress to have the Motor Vehicle Safety Act changed. By removing the words "or allow", NHTSA now has the statutory authority to give the manufacturers the option to comply with a standard through the use of a VBI. The Congressional prohibition on **requiring** a VBI remains:

*"A motor vehicle safety standard prescribed under this chapter may not require a manufacturer to comply with the standard by using a safety belt interlock designed to prevent starting or operating a motor vehicle if an occupant is not using a safety belt."  
(emphasis added)*

### Increased Seatbelt Usage

Over the last decades, consumers' acceptance/appreciation for safety features, nationwide safety campaigns (e.g. Click-It-Or-Ticket), seat belt laws, and better understanding of how seat belts save lives, have resulted in a dramatic increase in seat belt use (see Table 2 below). However, despite many millions of dollars spent annually, national belt use rates have not reached 90%+ as in the UK, Germany, etc<sup>4</sup>.

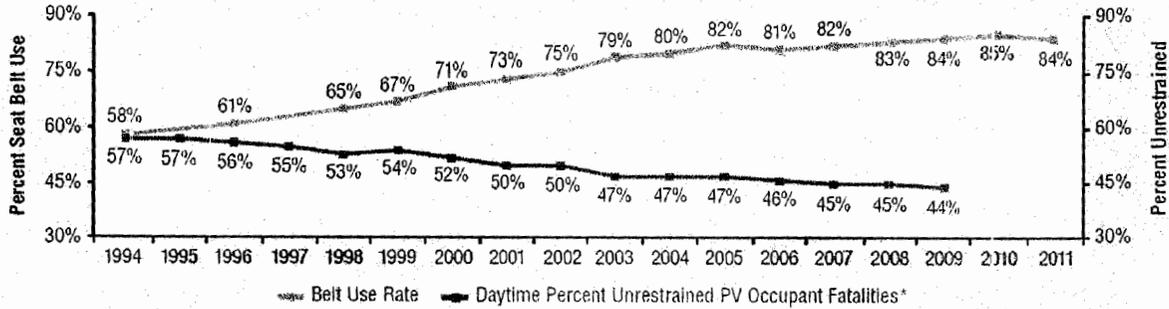
Table 2 - Average Seat Belt Use

States with	Average Seat Belt Use
Primary Laws	89.3%
Secondary Laws	81.2%
No Seat Belt Law (New Hampshire)	72.2%

<sup>4</sup> "COST EFFECTIVE EU TRANSPORT SAFETY MEASURES" - European Transport Safety Council, 2003 - Page 29.

The National Occupant Protection Use Survey (NOPUS) estimated the nationwide safety belt use in 2011 to be about 84 percent for drivers and 82 percent for right-front seat passengers (see Figure 1).<sup>5</sup> “[S]eat belt use in the United States ranged from 72.2 percent in New Hampshire to 97.6 percent in Hawaii and Washington.”<sup>6</sup> “In addition, fifteen States and the District of Columbia achieved use rates of 90 percent or higher.”<sup>7</sup>

**NOPUS Seat Belt Use Rate and Daytime Percent of Unrestrained Passenger Vehicle Occupant Fatalities**



(Source: NOPUS and FARS) \*The 2010 and 2011 data on the percent of unrestrained passenger vehicle occupant fatalities during daytime are not yet available.

**Figure 1**

An analysis of the 2010-2012 BMW Automatic Crash Notifications (ACN) indicates that approximately 93% of drivers and 92% of front passengers involved in moderate to serious crashes were belted. These seatbelt use rates are 9% and 10%, respectively, higher than that of the national level. This is significant when considering the potential risk of consumer backlash over a VBI as discussed later, and the potential for increased safety benefit for a belted-occupancy optimized restraint system.

Considering the public promotion of seatbelt use by means of high visibility media campaigns and increased police enforcement, it is logical to believe that the front passengers who today remain unbelted are fully aware of the potential risk they are posing to their own safety and health by choosing to do so, and constitute the hard core and stubbornly resistant front occupants who may never voluntarily buckle up. A VBI simultaneously has the potential to force buckling up as well as the potential to generate a certain consumer backlash against the OEM. This means there is both a risk and reward potential that must be carefully balanced. A vehicle with a VBI could alienate certain consumers and could negatively affect sales. This is a major reason why the VBI must always remain an OPTION for compliance.

<sup>5</sup> “Seat Belt Use in 2011—Overall Results” – DOT HS 811 544, December 2011

<sup>6</sup> “Seat Belt Use in 2010—Use Rates in the States and Territories” – DOT HS 811 493, July 2011

<sup>7</sup> “Seat Belt Use in 2010—Use Rates in the States and Territories” – DOT HS 811 493, July 2011

## Potential Costs to OEMs and Savings to Governments

Because this proposal adds an option for compliance, OEMs would be offered flexibility and there is no additional required cost burden to those manufacturers who do not intend to take advantage of this amendment. This results in a very "cost effective" proposal with high life-saving potential. Furthermore, it eliminates the need for a phase-in schedule that needs to be monitored by the Agency. The benefits of this amendment will accrue from lives saved and injuries prevented for front vehicle occupants.

In addition to reduced pain and suffering for victims and their families, higher belt use rates mean savings of Federal and State Funds from the reduced severity of injuries in accidents with unbelted occupants (e.g. expenses for EMS, hospitals, insurance, blocking of roads during an accident, traffic, etc.) Furthermore, the Federal government spends approximately \$10 Million dollars a year on National Occupant Protection projects such as the Click-It-Or-Ticket campaign. NHTSA spent "\$10 million in 2004, \$9.7 million in 2005, and \$9.2 million in 2006"<sup>8</sup>, and is requesting \$13.78 million dollars for FY 2013.<sup>9</sup>

NHTSA reported that between calendar year 2000 and 2006, States across the US have spent over \$88 Million dollars<sup>10</sup> of their State budget on "Click-It-Or-Ticket" advertising campaigns. An orderly rollout of VBIs has the potential to increase belt use rates at no cost to any government. These are savings that could be redirected to fund other needs (e.g. improvement of infrastructure, highways, law enforcement activities, etc.)

## Interlock Proposals

In order to ensure front occupants are belted, there are several options that could potentially be considered for interlocks. There are pros and cons to each for customer acceptance:

- Classic Starter Interlock: This type of system would not allow the vehicle to be started unless the seat belts for front occupants are buckled. The disadvantages are that customer acceptance would be very low due to historical negative reactions, encourages defeat mechanisms, remote starter systems could not be used, etc.
- Zero Mobility Interlock: This system allows the vehicle to be started, but the transmission will not shift out of Park unless front occupants are buckled. This benefits drivers who need to be able to start the vehicle without going anywhere (e.g. warm up, wait in the car with heat or A/C running, etc.)
- Highly Restrictive Mobility Interlock: This system allows the vehicle to be started, and permits only low speed (i.e. 25 mph or less) mobility when the front occupants are

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<sup>8</sup> "Analyzing the First Years Of the Click It or Ticket Mobilizations" – DOT HS 811 232 – January 2010, Page 14.

<sup>9</sup> "Fiscal Year 2013 Budget Overview", Page 18.

<sup>10</sup> "Analyzing the First Years of the Click It or Ticket Mobilizations" – DOT HS 811 232 – January 2010, Page 77.

unbelted<sup>11</sup>. The top speed is the same as that of a low speed vehicle (LSV) covered by FMVSS 500<sup>12</sup>, which requires LSVs to have certain regulated equipment but exempts them from certain occupant protection regulations. If either of the front occupants is not belted, this "LSV mode" will allow for driving short distances (e.g. move vehicles into a service bay, driving up ramps for towing situations, driving to a rural mail box, etc).

BMW prefers the Highly Restrictive Mobility interlock as a technical solution to ensure the front occupants are buckled. It is BMW's opinion that this will have the highest level of consumer acceptance and pave the way for selective and widespread use of VBIs as appropriate.

The BMW Interlock Proposals currently focus on front passengers. We are aware of the Agency's interest in ensuring seat belt usage for all vehicle occupants, and are willing to work jointly with NHTSA, in increasing rear seat occupant protection including child restraint LATCH systems via reminder systems. However, a VBI for rear seated occupants and/or child restraints would require some type of seat pressure sensing that would prevent consumers from carrying heavier objects in the rear seating area. This could be extremely problematic for consumers and could lead to consumer backlash of the VBI concept as experienced in the past.

### **Additional Benefits**

An amendment to FMVSS 208 would allow manufacturers design freedom to create innovative lightweight vehicle concepts, thus taking advantage of fuel economy savings and generating lower emissions. For BMW vehicles sold in the US, reducing vehicle weight by 7 pounds (e.g. obtained with the removal of knee airbags) translates into CO<sub>2</sub> savings between 274 and 406 metric Tons per year<sup>13</sup>. In addition, EPA's Greenhouse Gas Emissions report (EPA-420-F-11-041<sup>14</sup>) indicates that this weight reduction would translate into 30,850 to 45,744 gallons of fuel saved per year. Considering the BMW fleet accounts for only 2.34% of the US fleet, potential fuel savings could be millions of gallons.

### **Conclusion**

The foregoing facts and analysis demonstrate the need to optimize vehicles for the benefit of belted occupants. The measurable positive benefits range from the very high number of potential lives saved to reduced vehicle emissions and the freedom to design innovative lightweight and environmentally friendly vehicle concepts. It is for these reasons that BMW urges the NHTSA to amend FMVSS 208. The BMW Group is committed to working

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<sup>11</sup> A 30 second delay must be built into the system to accommodate legitimate temporary unbelted conditions as in a driver getting a wallet to pay tolls, a parent reacing behind to take care of a child, etc.

<sup>12</sup> There is no intent to suggest that FMVSS 500 should be amended or that a vehicle with a VBI should be classified as a Low Speed Vehicle.

<sup>13</sup> Estimate based on a fleet of 249,907 vehicles (BMW 2011 sales figures). A weight reduction of 100 kg translates into better rolling resistance, and a reduction of CO<sub>2</sub> of 2.9 g/mile.

<sup>14</sup> Greenhouse Gas Emissions from a Typical Passenger Vehicle – EPA-420-F-11-041 – December 2011.

constructively with NHTSA and to provide additional information if needed to develop successful amendment of the current rule. If you or members of your staff have any questions or would like to meet with us, please contact me or Máximo Aviles at 201- 571-5041 or [Maximo.Aviles@bmwna.com](mailto:Maximo.Aviles@bmwna.com).

Sincerely,



for

Thomas C. Baloga  
Vice President, Engineering US