

TABLE 4.—PRODUCT INDICATORS

Indicator	Considerations	Product examples
H .....	(Highly volatile and flammable) .....	(Propane, butane, Natural Gas Liquid (NGL), ammonia)
	Highly toxic .....	(Benzene, high Hydrogen Sulfide content crude oils).
M .....	Flammable—flashpoint <100F .....	(Gasoline, JP4, low flashpoint crude oils).
This section has been revised to include reference to ANSI/NFPA 59A in paragraph (a) as follows: L.		(Diesel, fuel oil, kerosene, JP5, most crude oils).
	Non-flammable—flashpoint 100+F .....	
	Highly volatile and non-flammable/non-toxic ....	Carbon Dioxide.

Considerations: The degree of acute and chronic toxicity to humans, wildlife, and aquatic life; reactivity; and, volatility, flammability, and water solubility determine the Product Indicator. Comprehensive Environmental Response, Compensation and Liability Act Reportable Quantity values can be used as an indication of chronic toxicity. National Fire Protection Association health factors can be used for rating acute hazards.

TABLE 5.—VOLUME INDICATORS

Indicator	Line size
H .....	≥18"
M .....	10"—16" nominal diameters.
L .....	≤8" nominal diameter.

H=High M=Moderate L=Low.

Table 6 is used to establish the PROBABILITY OF FAILURE Indicator used in Table 2. The "Probability of Failure" Indicator is selected from Table 6 as H or L.

TABLE 6.—PROBABILITY OF FAILURE INDICATORS  
[in each haz. location]

Indicator	Failure history (time-dependent defects) <sup>2</sup>
H <sup>1</sup> .....	>Three spills in last 10 years.
L .....	≤Three spills in last 10 years.

H=High L=Low.

<sup>1</sup> Pipeline segments with greater than three product spills in the last 10 years should be reviewed for failure causes as described in subnote<sup>2</sup>. The pipeline operator should make an appropriate investigation and reach a decision based on sound engineering judgment, and be able to demonstrate the basis of the decision.

<sup>2</sup> Time-Dependent Defects are defects that result in spills due to corrosion, gouges, or problems developed during manufacture, construction or operation, etc.

Issued in Washington, DC, on October 26, 1998.

**Kelley S. Coyner,**

*Administrator, Research and Special Programs Administration.*

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**DEPARTMENT OF TRANSPORTATION**

**National Highway Traffic Safety Administration**

**49 CFR Part 571**

[Docket No. NHTSA-98-4281]

RIN 2127-AG38

**Federal Motor Vehicle Safety Standards; Lamps, Reflective Devices and Associated Equipment**

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

ACTION: Statement of policy.

**SUMMARY:** This document announces that NHTSA will participate in an international effort under the aegis of the United Nations' Meeting of Experts on Lighting to develop a process for evaluating new ideas for signal lamps on vehicles. When that effort is complete, NHTSA will evaluate the results and see if it is appropriate to implement some or all of that process in the agency's evaluations of signal lighting ideas. Until the internationally-recommended process is available for NHTSA's consideration, the agency is adopting the policy (described in **SUPPLEMENTARY INFORMATION**) for evaluating requests to require or permit new or different signal lighting or signal lighting actuation.

**FOR FURTHER INFORMATION CONTACT:** Stephen R. Kratzke, Director, Office of Crash Avoidance Standards, NHTSA, 400 Seventh Street, S.W., Washington DC 20590. Mr. Kratzke's telephone number is (202) 366-4931 and his facsimile number is (202) 366-4329.

**SUPPLEMENTARY INFORMATION:**

**Statement of Policy**

When the agency is asked to evaluate a new signal lighting idea, NHTSA will ask:

1. Does the new signal lighting idea require a change in the standardized operation or appearance of a required lamp or piece of lighting equipment?

a. If NHTSA determines the answer is NO, does the new signal lighting idea impair the effectiveness of required lamps or lighting equipment?

i. If NHTSA determines the answer is YES, the new signal lighting idea is expressly prohibited by the lighting standard.

ii. If NHTSA determines the answer is NO, the new lighting signal idea may be installed on vehicles.

b. If NHTSA determines the answer is YES, the agency will proceed to Part 2 of this evaluation.

2. The current standardized approach for signal lighting has positive safety benefits by virtue of its broad public and international acceptance. Does the request to alter the current standardized approach for signal lighting present data purporting to show positive safety benefits from the new signal idea?

a. If no data are provided, NHTSA will not treat the request as a petition for rulemaking. The request will be forwarded to a public docket that will collect information describing all proposed new signal lighting ideas and systems. The docket will be available for review by NHTSA and others who may wish to plan future research based on the ideas and inventions collected in the docket.

b. If data are provided, NHTSA will treat the request as a petition for rulemaking. NHTSA will evaluate the data to determine if they show persuasive evidence of a positive safety impact.

i. If NO determination of positive safety can be made, NHTSA will not change its regulations to permit the new signal lighting idea, because that would negatively affect standardization of signal lighting.

ii. If YES, a determination of positive safety can be made. NHTSA will propose to amend its lighting standard to either permit or require the new signal lighting idea.

**Background on Stop Lamps**

Federal Motor Vehicle Safety Standard No. 108, Lamps, Reflective Devices and Associated Equipment (49

CFR 571.108) specifies types of signal lamps to be installed on new motor vehicles, and regulates their performance in terms of color, brightness, quantity, duty cycle (steady or flashing), and details of activation (e.g., activated when the service brakes are applied)<sup>1</sup>. All motor vehicles are required to have red stop lamps on the rear of the vehicle. Standard No. 108 requires that those stop lamps be activated "upon application of the service brakes." The goal of this activation requirement is to communicate to following drivers that the driver of the vehicle ahead has purposefully applied the brakes. This activation requirement does not differentiate between tapping the brakes and a hard braking application. Similarly, it does not indicate all times the vehicle may be slowing, such as when the driver downshifts or rapidly removes his or her foot from the accelerator pedal.

Many inventors have approached NHTSA over the past 30 years with ideas for changes that the inventors believe would improve stop lamps. Most of these ideas involve sending a different signal from the stop lamps for hard braking than for other, more typical brake applications. The agency has responded to these ideas by stating that it sees positive benefits from the current stop lamp activation provisions in Standard No. 108, which ensure a uniform, unambiguous signal that the driver has chosen to activate the service brakes. That is useful information for following drivers. However, NHTSA has acknowledged that it is *possible* that using a different action to activate the stop lamps or having the stop lamps send different signals might improve safety. The agency has stated it will consider changing the stop lamp requirements if it were shown that a change would yield a net safety benefit.

#### *Baran's First Petition for ABWS and NHTSA'S Response*

Baran Advanced Technologies, Ltd. of Israel manufactures an Advanced Brake Warning System (ABWS) that is intended to activate the stop lamps during emergency braking before the driver puts his or her foot on the brake pedal. The goal of this system is to give drivers of following vehicles an earlier warning of emergency braking. ABWS senses the rate at which the accelerator pedal returns to its upper stop after being released. It activates the stop

lamps for one second if the accelerator pedal reaches its upper stop at greater than the set rate. Its operation is based on the assumption that any rapid release of the accelerator pedal is the beginning of an emergency braking maneuver and will be immediately followed by application of the brake pedal.

The issue of ABWS and the stop lamp requirements in Standard No. 108 goes back nearly a decade. In 1989, an Israeli competitor of Baran called ATAT asked for an interpretation to permit its version of ABWS to be installed in the aftermarket. ATAT did not want any mandate to use its version of ABWS and it did not want to install the device on new vehicles. In a January 25, 1990 letter, NHTSA told ATAT that its device could not legally be installed even in the aftermarket. The agency explained that activating the stop lamps upon rapid removal of the driver's foot from the accelerator would undermine standardization of the stop lamp signal and "can only create the potential for confusion and dilution of the effectiveness of the stop [lamp] signal."

The subject rested there until Baran filed a petition for rulemaking in 1993. Baran did not question the agency's interpretation of the existing requirements of Standard No. 108. However, Baran asked that the Standard's requirements be changed to permit its ABWS to activate the stop lamps upon rapid removal of the driver's foot from the accelerator pedal.

Baran relied upon two studies to support its request for a change to Standard No. 108 to permit the installation of its ABWS system. The first was a paper by Enke titled "Possibilities for Improving Safety Within the Driver-Vehicle Environment Control Loop." This paper estimates that the impact speed of 25 percent of rear end crashes is no more than 10 km/h, or 6 miles per hour and that the distance traveled at that speed in 0.25 second is exactly equal to the distance required to stop from 10 km/h. Baran claimed that this paper showed that providing a driver with an additional 0.25 second of warning of an impending stop by the driver ahead of him or her could yield a 25 to 30 percent reduction in all rear-end crashes.

The second paper on which Baran relied was a NHTSA report on Intelligent Vehicle Highway System (IVHS) countermeasures to rear end crashes (DOT HS 807 995). This report found that 75 percent of rear-end crashes "do not involve simply a 'too-slow' reaction of the following driver to a sudden crash threat." In fact, the most common scenario noted in the report for these 75 percent of rear-end crashes

involves a lead vehicle that has been completely stopped for an extended interval (2 to 6 seconds) before it is struck by a following vehicle. However, the other 25 percent of rear-end crashes "may involve driver reaction time following a sudden crash threat as a critical factor." Baran believed that this report's finding was consistent with and bolstered the finding in Enke's report.

NHTSA carefully evaluated these reports and other data in response to Baran's petition. First, the IVHS paper found that rear-end crashes in which the following driver was attentive enough to respond to an earlier stop lamp signal were substantially less than 8 percent of all rear-end crashes, not 25 percent as interpreted by Baran. Second, a report by the Technical University of Darmstadt in Germany, titled Efficiency of Advanced Brake Light Devices, FO57 May 1994, found that responses by attentive test subjects improved by 0.10 to 0.15 second, instead of the 0.25 second improvement expected by Baran. This difference would substantially reduce the expected benefits of ABWS. Third, the potential safety benefits of ABWS appeared questionable. ABWS would allow as much as an additional 0.15 seconds of braking by following drivers, *but only if* the following driver immediately brakes hard upon seeing the stop lamps activated without waiting for any other cues that the lead vehicle is stopping, such as the car pitching or the tires and/or brakes squealing. To the extent the following driver waits for these other cues before braking, the potential benefits from ABWS are reduced. Recent research by Mercedes-Benz using a vehicle simulator in Germany found that more than 90 percent of drivers do not brake hard enough even when they have these cues *and* the lead vehicle's stop lamps are activated.

Fourth and finally, NHTSA was concerned that ABWS could negatively impact existing safety. At present, stop lamps are activated when the driver of a vehicle applies the brakes. ABWS would change this so that stop lamps were activated when the driver applies the brakes or rapidly removes his or her foot from the accelerator pedal. Baran's report on its ABWS that was submitted along with its 1993 petition showed that 23 percent of the time drivers did not brake after ABWS activated the stop lamps. Like the little boy who cried wolf, stop lamps that are activated when there is no subsequent braking are less likely to be immediately heeded in a real emergency. That undermines the most basic purpose of stop lamps. In addition, the agency was concerned that aggressive drivers could intentionally

<sup>1</sup> For the sake of simplicity, the rest of this document uses "NHTSA's lighting standard" or "Standard No. 108," instead of the full legal citation for this standard.

use these "false alarms" from the ABWS to further dilute the meaning of stop lamps.

Based on these analyses, involving both the absence of demonstrated net safety benefits and the possibility of net safety losses, NHTSA denied Baran's ABWS petition in a **Federal Register** notice of August 3, 1994 (59 FR 39522). In this denial, the agency expressly noted that it would consider data about the safety impacts of ABWS from a field study then being conducted by the Israeli Highway Safety Administration when those data became available and might reevaluate its decision in light of those data.

#### *Baran's Second Petition for ABWS and NHTSA's Response*

Less than a year after NHTSA's denial of Baran's first petition to allow ABWS, Baran submitted a second petition to allow ABWS. There were two changed factors since Baran's 1993 petition. First, Allied Signal, a major U.S. manufacturer of braking systems and components, had joined Baran in the petition. Second, the petition provided some preliminary, but not validated, data from the ongoing Israeli field study indicating that ABWS-equipped vehicles were in fewer crashes. The bulk of the petition contained a thorough explanation of why Baran and Allied Signal disagreed with NHTSA's judgment that current stop lamp signals would be more ambiguous if ABWS were permitted in the United States.

Upon review of this petition, NHTSA decided that the overarching issue was to define and articulate the agency's policy on braking and other lighting signals, so as to place the ABWS petition in the proper context. Once this NHTSA policy was articulated, the agency believed it would be a relatively simple matter to apply that policy in specific instances, whether to ABWS or some other signal. Up to this point, the ABWS discussions had involved only the parties asking for ABWS and the agency. Given the agency's desire to place ABWS in the broader context of signal lighting signals generally, NHTSA believed many more parties than ABWS petitioners and NHTSA should be involved in the discussion. Accordingly, NHTSA decided to publish a **Federal Register** notice asking for public comments on the agency's general policy on signals and on how that general policy should be applied in the case of four specific brake signaling ideas. Although all of the specific examples discussed in this notice were brake signaling ideas, NHTSA was also concerned about the appropriate policy for other signals, like turn signals. The

four specific brake signaling ideas discussed were ABWS, flashing Center High Mounted Stop Lamps (CHMSLs) to warn of hard braking, flashing CHMSLs to identify a stopped vehicle, and "brake" lamps on the front of vehicles to indicate the vehicle is braking.

#### *December 1996 Request for Comments*

NHTSA published a **Federal Register** notice on December 13, 1996 (61 FR 65510) that articulated the agency's general policy regarding new signal lighting ideas and how that policy would apply in the case of four specific brake signaling ideas, including ABWS, and asked the public for comments. NHTSA explained the basic purpose underlying its signal lighting policy as follows:

It is important that the integrity of the required signal lamps be maintained, and that auxiliary signal lamps not detract attention from the messages that the required signal lamps are sending. A vehicle signaling system must be as simple and as unambiguous as possible to others who share the roadway if traffic is to proceed in a safe and orderly fashion. As noted earlier, in many other countries, all auxiliary exterior lamps are expressly forbidden unless there is a specific regulation allowing it. 61 FR 65516.

The agency went on to explain that its paramount concern with signaling was to maintain standardization so as to minimize ambiguity about the meaning of required signal lamps. NHTSA will not give up the safety benefits of standardization unless there are data showing a net safety gain from doing so. Such data would generally come from large scale fleet tests over a significant number of vehicle miles. NHTSA has sponsored fleet tests to demonstrate the effectiveness of Center High Mounted Stop Lamps (CHMSLs) and conspicuity treatments for heavy trailers and truck tractors. However, these fleet tests are very expensive and time-consuming. Accordingly, the agency only conducts fleet tests after the signaling concept being evaluated has been analyzed within the agency and found to be sufficiently promising to have fleet testing included in NHTSA's research plan. NHTSA has neither the budget nor the time to sponsor fleet testing of most signal lighting ideas presented to it.

This leaves the inventor of the signaling concept as the other likely source to sponsor fleet tests or otherwise gather persuasive data showing a net safety benefit would result from the new signaling concept. NHTSA acknowledged that the costs and logistics of fleet testing may preclude most inventors from sponsoring those tests. Accordingly, the agency asked for

comments on its recommendation to inventors that, unless the inventor has data showing a net safety benefit from his or her new signaling concept, the signaling concept should be presented to NHTSA as a candidate for further research. If the suggestions are found to have merit, they can influence agency research priorities and perhaps be included in the agency's research plan. Upon completion of the research project, NHTSA would have data that would allow it to consider whether to permit or require a new signaling concept.

This broad policy was then applied to four specific signaling concepts. The first three were signaling ideas that were at that time unsupported by field tests or other data. The AlliedSignal/Baran ABWS was discussed, along with flashing CHMSLs to warn of hard braking and flashing CHMSLs to identify a stopped vehicle. While each of these concepts has some intuitive appeal, adopting any of these three suggestions would eliminate the standardization that is already in place for stop lamps. Since there were no data showing any offsetting safety benefits for diluting the standardization, NHTSA indicated that it was reluctant to amend its lighting standard to permit the introduction of any of these concepts, but asked for public comment on this approach.

The fourth signaling idea on which public comment was sought was front "brake" lamp systems that would alert an oncoming vehicle that the subject vehicle was braking. Again, there were no data provided to show safety benefits for this signaling concept. However, S5.1.3 of Standard No. 108 provides that, "No additional lamp, reflective device, or other motor vehicle equipment shall be installed that impairs the effectiveness of lighting equipment required by this standard." Front "brake" lamps can be implemented in ways that would not affect the operation of any of the required lamps now on vehicles. Assuming front "brake" lamps were implemented so as not to interfere with the effectiveness of required front lighting equipment, front brake lamps are permitted to be installed on vehicles now, without any changes to the lighting standard.

There are some noteworthy paradoxes associated with these four signaling ideas. The first three have some intuitive appeal, but may not be offered because they would dilute standardization of stop lamp signals. The fourth has little, if any, intuitive appeal. In fact, NHTSA stated that it expected no safety benefits from front

“brake” lamps. However, this concept may be offered on vehicles because it would not affect the standardized meaning of any required equipment. Nevertheless, the proponents of front “brake” lamps are not pleased with this result—they believe front “brake” lamps should be required. NHTSA asked the public for comments on its policy approach in this area and for comments on the four specific signaling ideas discussed in the notice.

#### *Public Comments on the December 1996 Notice*

NHTSA received more than 25 comments in response to its request for comments. With respect to the policy that should be followed in this area, Professor Rudolf Mortimer of the University of Illinois cautioned that decisions on any specific signal lighting idea should be made by looking broadly at all parts of the signaling system, not by considering “a host of seemingly desirable separate items that have no relationship to each other or the system as a whole.” Other commenters, including the Insurance Institute for Highway Safety (IIHS) and the American Automobile Manufacturers Association (AAMA) noted that opportunities may exist to further improve the signaling required by Standard No. 108, and that it is important for the agency to periodically review design-restrictive standards like Standard No. 108 to assure that its restrictions still serve a safety need.

Volvo’s comments urged the agency to adopt a permissive standard. Volvo suggested that NHTSA permit the installation of any auxiliary signal function that *might* work, unless that auxiliary signal plainly impaired the effectiveness of required signal lamps. However, Volvo commented that auxiliary signal functions should be mandated only if there were proof of significant safety benefits.

With the exception of Volvo, however, there was a general consensus in favor of the broad policy outlined by NHTSA in its request for comments. Most commenters agreed that NHTSA is correct to treat unsubstantiated concepts as requests for research and not to spend its resources responding to every signaling idea presented to the agency. For instance, the Truck Manufacturers Association (TMA) said: “TMA believes the responsibility for developing the necessary objective data lies with the petitioners and that the agency should not grant petitions unless such data are provided.” Toyota and AAMA made the same point, and both also asked that NHTSA consider harmonizing any new signals with other countries’ signaling

requirements. Baran and AlliedSignal, the parties that petitioned for ABWS, concurred with the agency’s intended policy of putting the burden on petitioners to provide data demonstrating the effectiveness of new signaling ideas before the agency began any rulemaking to modify its lighting standard. In the words of the ABWS petitioners:

Petitioners are sensitive to NHTSA’s concerns about the agency being inundated with untested ideas by inventors who lack data to support their ideas. Clearly, the agency cannot, and should not, initiate a rulemaking on each such idea. By contrast, where the efficacy of a logically attractive concept has been demonstrated by objective data, and where there is actual experience with the concept, we believe that a rulemaking is warranted. NHTSA Docket 96-041-N01-014, at 15.

Given this general agreement by commenters on the policy that should be applied when considering new signaling concepts, it is not surprising that the primary issue in each of the four examples identified by the agency was the quality of the available data. ABWS was the concept that drew the most comments specifically addressing it.

Five commenters favored ABWS. These five included Volvo, who commented that ABWS might work, so the concept should be permitted but not required. The petitioners for ABWS commented:

Support for the ABWS concept is based on more than speculation or testimonials as to the efficacy of these safety devices. The recent report of a comprehensive fleet study conducted for the Government of Israel demonstrates that vehicles equipped with ABWS incurred a statistically significant (at the 95% confidence level) 17.6% lower rate of rear-end crashes than did a control group of non-equipped vehicles. \* \* \* Together with other available data, the fleet study results persuasively demonstrate that ABWS devices offer significant safety benefits to the driving public, and that such devices do *not* pose any safety hazard. NHTSA Docket 96-041-N01-014, at 2.

ABWS petitioners also sought to address the agency’s concerns about the high rate of “false alarms.” NHTSA’s 1994 denial expressed the agency’s concern that 23 percent of the time ABWS activated the stop lamps, the driver never applied the brakes. ABWS petitioners included an Exhibit 9 to their comments. This exhibit was a study of six vehicles driven more than 61,000 kilometers. Table 1 of this study shows that ABWS activated the stop lamps 17.33 times per 1000 kilometers, and the driver never applied the brakes 2.57 of those times. Dividing these

numbers gives an updated “false alarm” rate of 15 percent.

However, the ABWS petitioners contended that the agency had improperly calculated the “false alarms” for ABWS. NHTSA’s calculations had been made by dividing the number of times ABWS activated the stop lamps with no subsequent braking by total number of times ABWS activated the stop lamps. The petitioners urged the agency to change the denominator and divide the number of times ABWS activated the stop lamps with no subsequent braking by the total number of times the stop lamps were activated. This change gives a much lower rate – 2.57 is now divided by 1,564.33 (1,547 times stop lamps activated by brake application + 17.33 times stop lamps activated by ABWS). By making this change, the “false alarm” rate is reduced to 0.2 percent, which petitioners argue is so small as to have no impact on drivers’ reactions to stop lamps.

Two other commenters, the American Trauma Society and the International Association of Chiefs of Police, also were aware of the Israeli field study. Both stated in their comments that the Israeli field study had demonstrated an 18% reduction in rear-end crashes, and that NHTSA should permit ABWS. The Insurance Institute for Highway Safety (IIHS) commented that, “if the claims of Baran can be verified,” then ABWS should not be a detriment to highway safety and may actually result in crash reductions. In that case, IIHS favored permitting ABWS. The American Automobile Association (AAA) did not comment specifically on ABWS, but did note in its comment that ABWS “has been demonstrated in field trials to reduce the rear end crash experience of vehicles in which it has been installed.”

On the other hand, ten commenters stated that ABWS should not be permitted. These commenters included vehicle manufacturers (American Automobile Manufacturers Association (AAMA), as well as BMW, Mitsubishi, and Toyota), the American Trucking Association (ATA), and Advocates for Highway and Auto Safety (Advocates). Professor Mortimer commented that the brake signal is “the most important signal presently displayed on motor vehicles and nothing should be done to increase its ambiguity.” Most of these commenters were of the opinion that, as expressed by AAMA, “research to date does not provide sufficient evidence that motor vehicle safety will be enhanced” by ABWS. ATA commented that NHTSA’s signaling standards should be changed *only* to correct a demonstrated deficiency or when a

proponent demonstrates significant, cost-effective safety improvements from the change. The Truck Manufacturers Association (TMA) commented that ABWS should not be permitted because it could result in continuous activation of stop lamps when the driver of a big truck shifts gears. However, TMA noted in its comment that there are likely to be situations in the future where it is appropriate for stop lamps to be activated without service brake application. TMA offered as examples automatic braking being explored as part of Intelligent Transportation Systems and "differential braking" for heavy trucks. TMA suggested that stop lamps then should probably be activated as a function of the rate of deceleration, instead of by brake application alone.

There were fewer comments on the other three signaling concepts. Only 11 commenters specifically addressed the idea of flashing CHMSLs to warn of hard braking. Three commenters supported the idea. Volvo, as per its overall policy view, believed NHTSA should permit flashing CHMSLs for hard braking, because the concept *might* work. In Volvo's opinion, NHTSA should not prohibit signaling concepts that might work. Mr. Chris Egger of Las Vegas, Nevada commented that the idea of flashing CHMSLs to warn of hard braking would allow following vehicles "to take quick evasive action," and that this idea had merit. However, Mr. Egger believed flashing CHMSLs would only be beneficial if they were mandated on all vehicles, because the mandate would "establish an understood signal and eliminate ambiguity." Finally, Mr. Hamid Kashefy of Montreal, Quebec commented that NHTSA should permit flashing CHMSLs to indicate hard braking.

The eight commenters, including Advocates, ATA, TMA, Professor Mortimer, and AAMA, that opposed this concept expressed the view that the public would get no benefits for the added costs of flashing CHMSLs to indicate hard braking. TMA referred to NHTSA's 1981 research showing no additional benefits from a flashing CHMSL for hard braking as compared with a steady-burning CHMSL. TMA suggested that, until new data are presented, there is no basis for changing the current requirements in this area. Both IIHS and Mitsubishi opposed the concept of flashing CHMSLs for hard braking because they were concerned this might not be a helpful signal for following drivers.

Nine commenters commented on the concept of flashing CHMSLs to indicate a stopped vehicle. The only commenter supporting this concept was Mitsubishi,

which said it did not object to flashing CHMSLs as a stopped vehicle signal. The other eight commenters that addressed this concept opposed it. Professor Mortimer commented, "There is no question that the single most important signal for the rear of motor vehicles to augment those presently provided would be a signal indicating that a vehicle is stopped or moving very slowly." However, Professor Mortimer asserted that a flashing CHMSL is not the way to provide a stopped vehicle signal because of confusion with the flashing lamps for turn and hazard signals. In the same vein, Advocates and IIHS commented that flashing CHMSLs could increase confusion and annoyance, especially in rush hour. Three other commenters, including ATA and Volvo, noted that 4-way hazard lamps are already on vehicles to serve exactly this purpose. Volvo stated its preference that flashing CHMSLs be reserved to indicate hard braking.

Eight commenters addressed the concept of front "brake" lamps. Volvo commented only that, at this time, NHTSA should not prohibit these signal lamps. The other seven commenters had less favorable views. Professor Mortimer commented that these signals should be prohibited because they can do more harm than good. Mr. Kashefy, an inventor of signal devices himself, also commented that front "brake" lamps should be expressly prohibited because there is a greater likelihood of safety losses than gains from this concept. However, Mr. Kashefy indicated that NHTSA should consider requiring front lamps that report when a vehicle is accelerating. TMA and IIHS, among others, commented that these front "brake" lamps might increase crashes and dilute the meaning of turn signals. ATA commented that front "brake" lamps would provide no benefits, while Advocates commented simply that, in that group's opinion, front "brake" lamps "have no merit whatsoever."

#### *October 1997 Notice Reopening the Comment Period*

Upon reviewing these comments, it was difficult to reconcile the general agreement about what policy NHTSA should apply to new signaling ideas with the widely divergent opinions about whether ABWS should be permitted. A closer look, however, readily explains the difference. With the exception of Volvo, the commenters agreed that new signaling concepts should be permitted when there are data demonstrating net safety gains from changing the current well-understood and effective signaling scheme. The commenters that favored ABWS had

reviewed the Israeli field study cited by the ABWS petitioners in their comments and concluded that it was a convincing demonstration of safety gains from ABWS. None of the commenters that opposed ABWS referred to the Israeli study. Hence, this Israeli study of ABWS seemed to be a key factor for NHTSA in deciding whether to amend the current signaling requirements of Standard No. 108 to permit ABWS.

Unfortunately, the Israeli study had not been reviewed by many commenters because it became available to the public in NHTSA's docket on the day before the comment period closed. None of the commenters who indicated there was insufficient evidence that ABWS would offer safety benefits appeared to have reviewed the Israeli study. On the other hand, all of the parties that said ABWS had been shown to offer positive safety benefits based their statements on the Israeli study.

Given the importance of this study in commenters' views about whether ABWS should be permitted, NHTSA decided to reopen the comment period to make all commenters aware of the Israeli study and to get comments specifically directed to the merits of the study. NHTSA also decided it would be helpful to commenters for the agency to set forth its preliminary review of the Israeli study and ask for public comment on specific aspects of the Israeli study. Hence, NHTSA published an October 27, 1997 notice (62 FR 55562) reopening the comment period for an additional 30 days, with a request that commenters focus on the Israeli study and the other materials that were not previously available for public review.

The Israeli study of ABWS involved 764 Israeli government vehicles tracked over a two-year period. Half the vehicles were equipped with ABWS, the other half were not. The control group (those vehicles that did not have ABWS) were matched to the ABWS-equipped vehicles. That is, each vehicle in the control group was the same make, model, and model year as a vehicle in the ABWS group.

These 764 vehicles were in a total of 881 crashes, 78 of which were crashes in which the government vehicle was struck from the rear. Of these 78 rear-end crashes, 37 occurred in the vehicle fleet equipped with ABWS, while 41 crashes occurred in the control group. After adjusting for the distance driven by three particular vehicles, the study's authors concluded that the rear-end crash involvement rate of the ABWS equipped vehicles was 17.6 percent less than that of the control vehicles. In addition, these 78 crashes were then

sorted into "relevant," defined in the report as "crashes in which the government vehicle was struck from behind while braking or immediately after braking," and "irrelevant," defined in the report as "crashes in which the government vehicle was already stopped for a while, or the driver reported that (s)he decelerated or braked gradually rather than abruptly, and/or the driver of the striking vehicle testified that he failed to pay attention to the stopping or stopped vehicle ahead." Of the 78 rear-end crashes, 26 were classified as "relevant" and the other 52 were deemed "irrelevant." The study concluded that the crash involvement rate of the ABWS-equipped vehicles in relevant rear end crashes was 64 percent less than that of the control group.

NHTSA identified some concerns about the study and the conclusions. The first concern was about how closely the ABWS group matched the control group. The Israeli study mentions that vehicle attributes (make, model, and year) were matched precisely in the ABWS group and the control group. However, no mention was made of matching important vehicle use patterns, such as the driving environment and the typical driver. It appeared that vehicle use patterns were not considered.

NHTSA next indicated in the October 27, 1997 notice that the analysis of the results appeared unusual. The data collected in the field study showed that there were 417 crashes for the ABWS-equipped vehicles and 464 crashes for the control group, or 9 percent fewer crashes for the ABWS group. This 9 percent reduction in crashes for the ABWS-equipped vehicles was found for:

- All crashes;
- Rear-end crashes; and
- Crashes other than rear-end crashes.

In other words, the ABWS-equipped vehicles in this field study were just as likely to avoid a frontal or side crash as they were to avoid a rear crash. Since ABWS would not be visible to the driver of the other vehicle in a frontal or side crash, there is no apparent reason to believe that ABWS would have any effect on those types of crashes. Thus, the data from this study do not appear to show any significant positive effect for ABWS. However, this simple analysis, which would be a conventional starting point for many analysts, was not reported in the study. NHTSA asked for comments on what significance should be given to the fact that one of the simplest uses of the data does not indicate any significant effect for ABWS in rear-end crashes relative to all other types of crashes.

The final major concern expressed by the agency in its October 1997 request for comments was that, as noted in the study, there was a large difference in the "relevant" rear-end crashes for the two groups—18 relevant rear-end crashes for the control group, but only eight relevant rear-end crashes for the ABWS group. However, the total rear-end crashes reported were substantially identical—41 for the control group and 37 for the ABWS group. The difference of four crashes in this sample size is not statistically significant. Thus, one interpretation of the data is that ABWS shifts rear-end crashes from the relevant to the irrelevant classification without reducing significantly the number of rear-end crashes. NHTSA asked for comments on the appropriate interpretation of the data.

In addition, the parties petitioning for ABWS had noted that several other countries permit the use of ABWS. The petitioners have identified Israel, Germany, Norway, the Czech Republic, and Austria, among others, as countries that currently permit ABWS on vehicles. NHTSA concurs with the petitioners that the practices in other countries ought to be given careful consideration. NHTSA has participated as the United States Delegate to the United Nations-sponsored Meetings of Experts on Lighting and Light Signaling in Geneva, Switzerland for more than 15 years. To bring insights and knowledge from lighting experts around the world, NHTSA sent a letter to each of the other 32 delegates, enclosing a copy of the Israeli field study and a copy of the October 27, 1997 notice reopening the comment period on this subject. These delegates to the Meeting of Experts on Lighting and Light Signaling were invited to review the documents and share any comments they might have.

#### *Comments on the October 1997 Notice*

Twelve parties responded to the reopening of the comment period with additional comments. Three commenters (the ABWS petitioners, the National Association of State Directors of Pupil Transportation Services, and Data Link, Inc.) said ABWS should be permitted because of its potential safety benefits, unless there were data showing a safety detriment from ABWS. Since there are no such data for ABWS, these commenters urged ABWS be permitted.

NHTSA notes that these comments argue for a different standard than those commenters favoring ABWS had urged in response to the December 1996 notice. In the previous notice, commenters had indicated that the Israeli study "persuasively demonstrate that ABWS devices offer significant

safety benefits to the driving public," in the words of the ABWS petitioners. No such assertions were made on behalf of the Israeli study in response to the reopening of the comment period. The position now advocated was that "the intuitive appeal of ABWS benefits is so strong as to render unnecessary the conduct of a fleet study to prove benefits," in the words of Data Link (NHTSA Docket No. 96-041-N02-006). Instead, "the key question NHTSA should be asking in this proceeding is whether there is a demonstrable safety disbenefit associated with ABWS," according to the ABWS petitioners (NHTSA Docket No. 96-041-N02-005, at p.3). Stated in a broader policy perspective, ABWS advocates believe that a signaling concept that is "intuitively appealing" should be permitted unless there are data demonstrating that this concept will negatively affect safety.

Three commenters (Nebraska Motor Carriers Association, Advocates, and AAMA) said that, for the reasons identified in the agency's October 27 notice, the Israeli field study was inadequate to serve as the basis for any change to current signaling requirements. In its comments, AAMA agreed with the ABWS petitioners that "the concept of advanced brake warning is intuitively appealing and worthy of further research." (NHTSA Docket 96-041-N02-007). AAMA recommended that a controlled fleet study be undertaken in the United States.

The remaining six commenters were Delegates to the United Nations-sponsored "Meetings of Experts on Lighting and Light Signaling" in Geneva, Switzerland. These six international experts said that the Israeli study was not conclusive and was an insufficient basis for a change to current signaling. The Society of Motor Manufacturers and Traders (SMMT), the United Kingdom vehicle manufacturers' group, commented that "if all vehicles were fitted with ABWS and gave 23% false signals, the value of the stop signal would be greatly debased." (NHTSA Docket No. 96-041-N02-008). SMMT also commented that the issue of signaling and ABWS ought to be considered in a world-wide context, not just by the United States.

The second of the international commenters was Mr. Hanno Westermann, the chair of a Safety and Visual Performance (SVP) working group that has been asked by the UN-sponsored "Meetings of Experts on Lighting and Light Signaling" to study the subject of signaling, including ABWS, and to report the findings back to the Experts. Mr. Westermann

commented that the current signaling system has evolved continuously and is well understood. The Israeli study of ABWS "shows possible benefits," but those benefits do not appear to be significant, according to Mr. Westermann. In addition, the study shows that ABWS "exhibits a number of negative aspects." Specifically, Mr. Westermann referred to the instances when the stop lamp is illuminated but the brake is never applied (NHTSA Docket 96-041-N02-009). Mr. Westermann also noted that the 100 millisecond earlier warning of braking that is achieved with ABWS can also be achieved by means of light-emitting diodes (LEDs) or neon lamps in stop lamps (because they have a faster rise time than conventional incandescent lamps), without illuminating the stop lamps in situations where the brakes are never applied.

The third international commenter was Dr. Karl Manz, a consultant to the German Delegate to the Meeting of Experts. Dr. Manz stated that the Israeli field study is not sufficient to demonstrate the safety benefits claimed for ABWS.

The fourth international commenter was Mr. Hans Ammerlan, the Netherlands Delegate to the Meeting of Experts. Mr. Ammerlan stated that "false alarms," i.e., activation of the stop lamps when the brakes are never applied, are inherent in the design of ABWS because the assumption that rapid removal of the foot from the accelerator pedal will be followed by braking may be true most of the time, but will not be true 100% of the time. Mr. Ammerlan commented, "We consider such false alarms as a degradation of the brake signal." (NHTSA Docket No. 96-041-N02-012). Mr. Ammerlan also commented that if earlier warning of braking is useful, one would begin by addressing the rise times of current stop lamps since that has no possibility of degrading the brake signal.

The fifth international commenter was Mr. Kari Saari, Finland's Delegate to the Meeting of Experts. Mr. Saari commented that Finland follows the European Commission's lighting regulations, so it does not allow ABWS on vehicles.

The sixth international commenter was Mr. I. Ajtós, Hungary's Delegate to the Meeting of Experts. Mr. Ajtós commented that he agreed with NHTSA's observations about the shortcomings of the Israeli study. Mr. Ajtós also commented that human factors should have been studied, and specifically asked whether more frequent illuminations of stop lamps

would not adversely affect the response of following drivers to those lamps. Mr. Ajtós concluded by stating that Hungary specifically rejected a petition to allow ABWS in that country in 1995 for two reasons. First, the 1968 Vienna Convention on Road Traffic, which Hungary has ratified, defines a "stop lamp" as "the lamp used to indicate to other road users to the rear of the vehicle that *the driver is applying the service brake.*" (Emphasis in Mr. Ajtós' comment—NHTSA Docket No. 96-041-N02-013, at page 5). According to Mr. Ajtós, Hungary interprets this language as precluding the use of ABWS. Second, Mr. Ajtós commented that Hungary denied the ABWS petition because it agreed with the reasoning in NHTSA's 1994 ABWS petition denial.

#### *September 1998 Withdrawal of ABWS Petition*

On September 16, 1998, the ABWS petitioners withdrew their petition for rulemaking to permit ABWS. The petitioners explained the withdrawal as follows:

Given that NHTSA now seems to be applying a higher standard than that which should be applied for optional safety devices, and in spite of the considerable evidence of the safety benefits of ABWS that Petitioners have presented to date, Petitioners have decided that they cannot at this time move forward with their Petition. Other nations have approved the use of ABWS based on the considerable volume of data showing that it is a proven crash avoidance device, and additional nations are in the process of considering ABWS technology. In light of NHTSA's current views, resources at this time will be focused on these nations.

#### **NHTSA's Conclusions and Decisions**

After considering all the comments and the other information that is available on the subject of signals for braking, the agency has reached the following conclusions.

##### *1. Current NHTSA Signaling Requirements Are the Norm Internationally, Not the Exception*

The current signaling requirements for braking in NHTSA's lighting standard (stop lamps come on when service brakes are applied, stop lamps are steady-burning, not flashing, and stop lamps do not give a different signal for hard braking than lighter braking) are all consistent with the prevailing international practice. Indeed, the 1968 Vienna Convention on Road Traffic, signed by the United States and many other countries, sets forth an international consensus on what signal lamps should mean. Suggested changes to the prevailing international consensus on signaling requirements

may of course be considered by individual countries to respond to particular needs, but such changes should also be considered internationally at an international forum.

##### *2. Current Information Provided by Signal Lamps That Conform With NHTSA's Signaling Requirements is Standardized and Well Understood by the Driving Public*

The information currently provided by signal lamps that conform with the requirements of NHTSA's lighting standard is well understood by the driving public. The information that is provided by signals (driver has applied brakes, has shifted into reverse, etc.) is instantly recognized and unambiguously informative. Even the ABWS petitioners expressly acknowledge the importance of uniform, unambiguous signals. Petitioners said, "The October 27 notice recognizes, quite properly, that there is a benefit associated with a uniform, unambiguous signal system;" NHTSA Docket No. 96-41-N02-005, at page 6. Given the benefits of the current standardized signaling system, it is reasonable and appropriate to require parties asking for a change to the current system to bear the burden of demonstrating that the benefits that will be lost by changing from the current uniform, unambiguous signals will be more than offset by new safety benefits from the signaling change.

##### *3. It Is Appropriate for NHTSA and Other Countries To Re-Examine the Current Signaling Requirements To See If They Can Be Improved*

The Vienna Convention set forth the international consensus about the state of the art of signaling information in 1968. There have been significant advances in electronics and sensors in vehicles over the past 30 years. Those advances make it appropriate to reexamine the information provided by signal lamps to see if the information can be improved.

NHTSA understands that the total information that can be provided by signal lamps is limited. It is clear that drivers won't respond instinctively to 100 different lights on the rear of vehicles. Likewise, illumination of a lamp can't mean ten different things. However, much human factors work needs to be done to understand these limits and other areas such as how many signals will produce "information overload," dilution of the intended message, and the risk that activation of one signal lamp will mask information from other signal lamps. In addition,

NHTSA understands that much work needs to be done on crash data analysis to determine what new functions that could be served by signal lamps in 1998 would provide the biggest added safety gains. The goal of this work would not be to have vehicles provide more and more signals, but to assure that vehicles have clear signals that provide the most important information to other drivers.

In addition, NHTSA believes that any decision about what additional or improved information can or should be provided by signal lamps should be made after a comprehensive look at all the possibilities for enhancement, instead of as a piecemeal response to individual concepts. For instance, a decision to permit stop lamps to perform the ABWS function may limit those lamps' suitability for performing other functions, such as signaling onset of rapid deceleration or following too closely. While that may ultimately be the right decision, it should be made after considering the significance of those other functions.

In accordance with these conclusions, NHTSA is taking the following actions.

1. NHTSA Will Participate in the Efforts To Try To Develop an International Consensus on How To Handle New Signaling Ideas

The SVP Group has been asked by the UN-sponsored Experts on Lighting to study the subject of signaling and to report recommendations back to the Experts Group. The need to reexamine signaling ideas as we enter the 21st Century is an international concern. It seems appropriate to try to address that concern internationally. For example, according to the ABWS petitioners, Israel, Germany, Norway, and the Czech Republic currently permit the installation of ABWS on vehicles. The United States and Hungary have previously said no to ABWS. It would seem to be better for everyone, including the driving public, the governments, and vehicle and lighting manufacturers, if there were clear standardized meanings for signal lamps in all six of these countries.

Moreover, there is an international need to address this concern. All 16 of the countries that regularly participate in the U.N. Meeting of Experts on Lighting and Light Signaling report that they have been approached by people who believe they have devised improvements to the current signaling. It would be preferable to develop a global means for considering such changes to signaling, instead of having each nation consider the changes in isolation from the rest of the world.

NHTSA has already had a representative, the same person who is the United States Delegate to the Meeting of Experts on Lighting and Light Signaling, attend three meetings and participate in two video conferences of the SVP to participate in the effort to develop recommendations for signaling to be presented to the Meeting of Experts on Lighting and Light Signaling. NHTSA will make every effort to assure that an agency representative is actively involved in the SVP work and any other efforts of the Meeting of Experts to forge an international consensus on updating light signaling.

2. Until a New International Consensus Emerges, NHTSA Will Follow the Policies for Evaluating New Signaling Concepts Described in the December 1996 Request for Comments

NHTSA recognizes that it often takes years to arrive at an international consensus. It would be inappropriate for the agency to refuse to take any action on the subject of improved signaling until an international consensus is reached and the agency evaluates that consensus to see if some or all of it can be implemented by NHTSA, consistent with its safety mission and applicable legal requirements. Accordingly, NHTSA is announcing the policy it will follow for evaluating requests for changes to current signaling requirements for lamps. This policy is the same approach that was set forth in the December 1996 request for comments, which was supported by the vast majority of commenters to that notice.

The first question NHTSA must address in considering a new signal lighting idea is whether it requires a change in the standardized operation or appearance of a required lamp or piece of lighting equipment. As indicated above, the agency reiterates that there is a positive benefit to the motoring public from standardizing signals. NHTSA has always tried to tailor its signal lamp requirements to assure the public of the benefits of standardization, while at the same time allowing as much design freedom as possible for the location, shape, styling, and light source designs for those lamps. In the December 1996 request for comments, NHTSA noted that the intensity ranges of taillamps and stop lamps are regulated so that a following driver can distinguish a red stop lamp from a red taillamp as soon as the stop lamp is actuated by braking, without having to notice the transition. However, the size and shape of stop lamps and taillamps are left to the designer of the lamps. Likewise, stop

lamps are required to be steady-burning to distinguish them from the required flashing of turn signals and hazard warning signal lamps of the same brightness and color.

In keeping with this approach, NHTSA also allows for lighting equipment beyond what is required by the lighting standard, called "auxiliary" lighting, provided that this auxiliary lighting does not "impair the effectiveness" of the required lamps and reflectors. Thus, when NHTSA is asked about a new signal lighting idea, the agency's first question is whether the new signal lighting would require a change to the standardized operation of required lighting equipment. If the new idea does not require a change to the standardized operation of required lighting equipment, the only question left for the agency is whether the new lighting would impair the effectiveness of required lighting. If it would impair the effectiveness of required lighting (e.g., by masking the operation of required lighting or introducing ambiguity into the meaning of required lighting), the idea is expressly prohibited by S5.1.3 of Standard No. 108 and it may not be installed on vehicles. That is because this lighting would undermine the safety benefits that NHTSA has determined are associated with the required lighting.

If, however, NHTSA determines the new signal lighting would not impair the effectiveness of required lighting, it may be installed on vehicles consistent with the existing requirements of the lighting standard. This is true even if there is no safety value for such auxiliary lighting. In these circumstances, the public is not losing any of the safety benefits from the required lighting. Thus, even if the public gains nothing of value from such auxiliary lighting, the result is safety-neutral.

Many new signal lighting ideas, however, would require a change in the standardized operation of required lamps or lighting equipment. In these instances, the hurdle that these ideas must clear is higher. This is because the public would be losing the safety benefits of the current standardized operation of required lighting that result from the broad public and international acceptance of the standardized operation. In these cases, NHTSA has long said that it is certainly possible that a new idea for the operation of signal lighting *might* improve safety. However, given the safety benefits associated with the standardized operation and meaning of required lighting, the burden is on the proponents of the new signal lighting idea to demonstrate that the use of the

new signal lighting idea would yield a positive safety benefit large enough to more than offset the adverse safety effects of giving up the standardized operation and meaning of signal lights.

Some commenters to the October 1997 notice reopening the comment period argued that this standard is too demanding. Instead, they urged that the appropriate standard should be that lighting will be permitted that necessitates changes to the standardized operation and meaning of required lighting *unless* there are data available showing adverse safety consequences from the new signal lighting. In other words, one should not have to demonstrate that new signal lighting offers the public any safety gains, just that it would not cause the public any safety harm.

NHTSA is not adopting this position as its policy. As noted above, the currently standardized operation and meaning of required lighting gives safety benefits because it enjoys broad public and international recognition and acceptance. NHTSA has made findings of benefits for the current standardized approach and discussed its current standardized approach with lighting experts from other nations at a United Nations-sponsored forum. Given this background, it seems reasonable and appropriate to require advocates of change to the current standardized approach to say more than that different decisions could have been made to achieve the same results from standardization. Even if that is true, it results in nothing of value for the American driving public. NHTSA concludes that it is more appropriate to require advocates of change to demonstrate that different decisions would have achieved better safety.

But, those advocates may ask, why is it acceptable for auxiliary lighting that does not impair the effectiveness of required lighting to merely be safety-neutral, while changes to the standardized approach for required lighting must be shown to be affirmatively safety-beneficial? The answer is that whatever happens with such auxiliary lighting does not effect the core safety functions performed by the required lighting, whereas changes to the standardized operation of required lighting directly impacts the core safety functions performed by those lamps. NHTSA believes a higher standard is appropriate for changes to the core safety functions of required lamps and signals than for changes to peripheral, non-required lamps that do not affect any of the core safety functions of required lamps and signals.

Required lighting cannot achieve its intended safety purpose unless the message of the lighting is instantly and unambiguously recognized by other drivers. The only way to achieve that level of clear recognition is to standardize the operation and meaning of required lamps—in other words, NHTSA must pick a single approach. When NHTSA changes the single standardized approach, it must specify a different single standardized approach for required lamps and lighting equipment. Such a change requires the public to adapt to new meaning and/or operation for required lamps and vehicle and lighting manufacturers to make any needed changes to their products. Something of this magnitude should not be undertaken lightly and should be justified by a greater good for all at the end, such as enhanced safety for the driving public.

In the case of auxiliary lighting that does not impair the effectiveness of required lighting, NHTSA has not recognized any safety purpose for that auxiliary lighting. It does not matter whether the public recognizes the message of the auxiliary lighting, as long as this lighting does not detract from the required lighting. There are hundreds of possible approaches for this type of lighting and NHTSA has no reason to pick any single approach over the others. In this situation, all that is required is that the auxiliary lighting not do harm to the required lighting.

NHTSA's regulations currently set forth at 49 CFR Part 552 the requirements for the agency to treat a request as a petition for rulemaking. Section 552.4 provides:

Each petition filed under this part must:

- (a) Be written in the English language;
- (b) Have, preceding its text, a heading that includes the word "Petition";
- (c) Set forth facts which it is claimed establish that an order is necessary;
- (d) Set forth a brief description of the substance of the order which it is claimed should be issued; and
- (e) Contain the name and address of the petitioner.

The pertinent requirement for this discussion is the one in § 552.4(c) that a petition must "set forth facts" to support the contention that a rulemaking change is needed. In the case of signal lighting ideas, NHTSA has, as noted, made findings of benefits for the current standardized approach and discussed this approach at least twice a year with lighting experts from other nations at a United Nations-sponsored forum on lighting. In this context, NHTSA interprets its regulation as requiring that a request for a change

to signal lighting must provide more than assertions of an unaddressed need, speculations about how to address that need, and testimonials about the efficacy of the requested approach, and the like. Those are not "facts" within the meaning of 49 CFR 552.4(c); they are simply opinions.

Thus, when NHTSA is requested to alter the current standardized operation and meaning for signal lighting, the agency determines whether the request provides data purporting to show positive safety benefits sufficient to more than offset the benefits lost from eroding standardization. If the request contains no such data, NHTSA interprets its regulations as providing that such a request will not be treated as a petition for rulemaking. Instead, the request will be treated as a suggestion for research to try to gather the necessary data. The request will be forwarded to a public docket that will collect information describing all proposed new signal lighting ideas and systems. The docket will be available for review by NHTSA and others who may wish to plan future research based on the ideas and inventions collected in the docket.

If the request provides data, NHTSA will treat it as a petition for rulemaking asking for changes to the current standardized meaning and operation for signal lighting. The agency will evaluate the data to determine if they show persuasive evidence of a positive safety impact. If that evaluation does not permit a determination of positive safety from the requested change, NHTSA will not change its lighting standard to permit the new signal lighting idea. If the evaluation of the data leads the agency to the conclusion that positive safety effects are likely from the requested change, NHTSA will propose to amend its lighting standard to either permit or require the new signal lighting idea.

NHTSA intends to apply this policy to any requests it receives for new signal lighting ideas. Because this notice explains how the agency will analyze requests and what sort of data is needed to support requests for changes in the standardized operation and meaning of required lighting, people with ideas for new signal lighting should now have a better understanding of what supporting information is needed when they request changes to standardized signal lighting. The agency will reexamine this policy periodically to assure that it continues to be appropriate. NHTSA will carefully consider the work in this area of SVP and the United Nations-sponsored Meeting of Experts on Lighting and Light Signal when such

work becomes available. To repeat, the agency will actively participate in the international effort in this area.

### 3. Results of Applying These Policies To the Four New Signaling Concepts Described in the December 1996 Request for Comments

*a. ABWS.* ABWS requires a change in the standardized operation of required lamps (the stop lamps). Those lamps are currently required to be activated only when the service brakes are applied. ABWS would also activate those lamps if the driver rapidly removes his or her foot from the accelerator pedal. The next question for NHTSA's determination is whether the ABWS request to alter the activation of stop lamps presents data purporting to show positive safety benefits. Again the answer to this question is yes. The Israeli field study that was the subject of NHTSA's October 27, 1997 reopening of the comment period concluded that the rear-end crash involvement rate of ABWS-equipped vehicles was 17.6 percent less than the rear-end crash involvement rate of the control vehicles. Thus, NHTSA would treat the ABWS request as a petition for rulemaking under this policy.<sup>2</sup>

The next step under this policy would be for the agency to evaluate the Israeli study to determine if it shows persuasive evidence of a positive safety impact. After its evaluation, NHTSA has concluded that the Israeli study does not demonstrate any significant positive effect for ABWS. As noted in the October 27, 1997 request for comments, the data collected in the field study showed that there were 417 crashes for the ABWS-equipped vehicles and 464 crashes for the control, or 9 percent fewer crashes for the ABWS group. However, this 9 percent reduction in crashes for the ABWS-equipped vehicles was found for:

- All crashes;
- Rear-end crashes, and
- Crashes other than rear-end crashes.

In other words, the ABWS-equipped vehicles in this field study were just as likely to avoid a frontal or side crash as they were to avoid a rear crash. Since ABWS would not be visible to the driver of the other vehicle in a frontal or side crash, there is no reason to believe it would have any effect on these types of crashes. Thus, the data from this study do not appear to show any positive effect for ABWS.

In addition, the Israeli study did not show any significant effect on the total

number of rear end crashes for ABWS-equipped vehicles. As noted in the October 27, 1997 request for comments, the authors of the field study sorted the rear-end crashes into a "relevant" and an "irrelevant" category, and claimed a major reduction of "relevant" rear-end crashes for ABWS—there were 18 relevant rear end crashes for the control vehicles, as compared with 8 relevant rear end crashes for the ABWS-equipped vehicles. However, the total rear end crashes for the ABWS vehicles and the control vehicles were substantially identical—41 rear-end crashes for the control group and 37 for the ABWS group. Whatever the merits of ABWS at shifting rear-end crashes from the "relevant" to the "irrelevant" category, the crashes still occurred. The data from the Israeli field study do not demonstrate any substantial reduction in total rear-end crashes for vehicles with ABWS compared with vehicles with conventional activation of stop lamps.

After evaluating the data from the Israeli study, NHTSA concludes that these data do not demonstrate any significant positive safety impact for ABWS, so there would be nothing gained for the American public to more than offset the safety lost by changing the current standardized approach to stop lamps. It seems that the ABWS petitioners came to the same conclusion after reviewing the Israeli study. In March 1997, when the ABWS petitioners submitted the Israeli study to NHTSA, they said that "the fleet study results persuasively demonstrate that ABWS devices offer significant safety benefits to the driving public." NHTSA Docket 96-041-N01-014, at 2. However, eight months later in November 1997, when they responded to the reopening of the comment period to allow public review of the Israeli study, the ABWS petitioners made no such claims. Instead, they now asserted, "In sum, all of the real-world evidence drawn from actual crash statistics, and all of the available studies, point in the same direction—there is no safety disbenefit associated with ABWS." NHTSA Docket No. 96-041-N02-005, at p.9. The agency also notes that none of the other commenters whose March 1997 comments indicated that they believed the Israeli study demonstrated significant benefits for ABWS (AAA, International Association of Chiefs of Police, and the American Trauma Society) responded to the agency's reopening of the comment period and preliminary evaluation of the Israeli study.

The Israeli study is an insufficient demonstration of positive safety impacts

from ABWS. Accordingly, NHTSA's rulemaking action on ABWS is hereby withdrawn.

*b. Flashing CHMSLs to warn of hard braking.*

*c. Flashing CHMSLs to warn that the vehicle is stopped.* Flashing CHMSLs to warn of hard braking or that the vehicle is stopped would require a change in the standardized operation of required lamps (the stop lamps). Those lamps are currently required to be steady-burning. As noted above, the requirement for stop lamps to be steady-burning is intended to assure that drivers can instantly distinguish stop lamps from turn signals and hazard warning lamps, which flash when activated. The next question NHTSA must answer then is whether the requests to alter the activation of stop lamps to permit flashing CHMSLs for hard braking or a stopped vehicle have presented data purporting to show positive safety benefits sufficient to more than offset the safety losses from changing standardization. The answer to this is no. As noted by TMA in its comments, the only data in this area indicates no significant improvement from flashing CHMSLs (NHTSA's large scale field study in 1981). Accordingly, NHTSA would not treat these requests as petitions for rulemaking. Instead, the requests would be treated as suggestions for research to try to gather the necessary data. The requests would be forwarded to a public docket that will collect information describing all proposed new signal lighting ideas and systems. The docket will be available for review by NHTSA and others who may wish to plan future research based on the ideas and inventions collected in the docket. NHTSA notes that since it has already researched the merits of flashing CHMSLs, it is unlikely that the agency will research the same area again until there is some reason (such as new data in this area) to believe the 1981 study may no longer be valid.

*d. Front "Brake" lamps to alert oncoming vehicles the subject vehicle is braking.* Front "brake" lamp systems to alert oncoming vehicles that the subject vehicle was braking would not require any change in the standardized operation of required lamps. Thus, this idea has a much lower hurdle to clear than ideas that would require changes in the standardized operation of required lamps. The only issue for these front "brake" lamps is whether they would impair the effectiveness of required lighting. Assuming NHTSA determines that the front "brake" lamps are designed so as not to impair the effectiveness of the required lighting on the front of the vehicle, NHTSA's

<sup>2</sup> Under its policies in place at that time, NHTSA treated the ABWS request as a petition and granted it on July 26, 1996.

lighting standard already permits these front "brake" lamps to be installed on vehicles.

Of course, petitions to *require* front brake lamps or any other motor vehicle equipment are evaluated according to NHTSA's normal approach—will the American public get its money's worth from this requirement? In other words, are the safety benefits for the new equipment sufficient to justify the costs that will be imposed on the American people by a new requirement for this equipment? In the case of front brake lamps, NHTSA concluded in 1996 (61 FR 10556; March 14, 1996) that the answer was no, and denied a petition to require front "brake" lamps. Any future petitions to require front "brake" lamps will need to demonstrate greater safety benefits (which can most readily be done with testing and other data) to perhaps get a different result than the denial NHTSA announced in 1996.

In the December 1996 request for comments, NHTSA asked for comments on whether the agency should expressly prohibit front "brake" lamps because of the lack of data to show any positive safety effects for these lamps and the likely negative safety consequences of the widespread use of these lamps. After consideration of this possibility, NHTSA has decided not to take this action. These lamps do not necessarily affect the standardized operation, or impair the effectiveness, of any required lighting. NHTSA has traditionally had no regulations for such lamps, because they had no impact on the core safety functions of lighting. The agency will reexamine this approach if it has some testing or other indication that this approach may need to be changed. At this time, NHTSA has no such data. If front "brake" lamps are installed more widely and the agency's concerns remain, NHTSA will carefully consider a research effort to get more information about the safety impact of such lamps.

**Authority:** 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.50 and 501.8.

Issued on October 30, 1998.

**James R. Hackney,**

*Acting Associate Administrator for Safety Performance Standards.*

[FR Doc. 98-29520 Filed 11-3-98; 8:45 am]

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**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**50 CFR Part 648**

[Docket No. 971015246-7293-02; I.D. 101998A]

**Fisheries of the Northeastern United States; Summer Flounder Fisheries; Readjustment to the 1998 Commercial State Quota for New York**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Commercial quota adjustment.

**SUMMARY:** NMFS issues this notification announcing an adjustment to the 1998 summer flounder commercial state quota for New York. This adjustment complies with regulations implementing the Fishery Management Plan for the Summer Flounder, Scup, and Black Sea Bass Fisheries (FMP), which require that landings in excess of a state's annual summer flounder commercial quota be deducted from a state's respective quota the following year. The public is advised that the quota adjustment has been made, and is informed of the revised quota.

**DATES:** Effective October 30, 1998, through December 31, 1998.

**FOR FURTHER INFORMATION CONTACT:** Myles Raizin, Fisheries Management Specialist, 978-281-9326.

**SUPPLEMENTARY INFORMATION:** Regulations implementing summer flounder management measures are found at 50 CFR part 648, subparts A and G. The regulations require annual specification of a commercial quota that is apportioned among the Atlantic coastal states from North Carolina through Maine. The process to set the annual commercial quota and the percent allocated to each state is described in § 648.100. Section 648.100(d)(2) provides that all landings for sale in a state shall be applied against that state's annual commercial quota. Any landings in excess of the state's quota must be deducted from that state's annual quota for the following year.

The final specifications for the 1998 summer flounder fishery (62 FR 66304, December 18, 1997), adopted to ensure achievement of a fishing mortality rate (F) of 0.24 for 1998, set a total commercial quota equal to 11,105,636 lb (5.0 million kg). In the preamble to the rule implementing these specifications, NMFS noted that associated adjustments to states' 1998 quotas would be required as a result of any landings in excess of 1997 quota. Two adjustments were made to the 1998 state commercial quotas, effective January 16, 1998 (63 FR 3478, January 23, 1998) and April 23, 1998 (63 FR 23227, April 28, 1998) to reflect updated 1997 landings. In addition, NMFS adjusted the North Carolina commercial quota to comply with a court order setting aside the 1997 overage, which had been deducted from the 1998 quota earlier this year. This adjustment was effective on October 20, 1998 (63 FR 56867, October 23, 1998).

In the April 28, 1998, notification announcing readjustments to the 1998 summer flounder commercial quotas, it was noted that further law enforcement investigations were ongoing, and a resulting quota adjustment from those investigations would be published, if necessary. The conclusion of such investigations resulted in an increase of 24,863 lb (11,277.8 kg) to the amount of summer flounder landed in New York in 1997 so that the 1997 overage for New York is revised from 61,398 lb (27,850 kg) to 86,261 lb (39,127.9 kg). Therefore, the final readjusted quota for New York in 1998 is 24,863 lb (11,277.8 kg) less than the adjusted quota published in the April 28 notification for a final 1998 quota for that state of 763,419 lb (346,286.8 kg). The final readjusted 1998 statewide quota is revised from 10,958,734 lb (4,972,102 kg) to 10,933,871 lb (4,959,603 kg). Also, commercial landings for New York for 1997 are revised from 815,741 lb (370,014 kg) to 840,604 lb (381,297.9 kg) and total coastwide commercial landings for summer flounder are revised from 8,887,783 lb (4,031,431 kg) to 8,912,646 lb (4,042,776.2 kg). Table 1. displays the current 1998 quotas resulting from these readjustments.

TABLE 1.—SUMMER FLOUNDER FINAL READJUSTED 1998 QUOTAS

State	Unadjusted 1998 quota <sup>1</sup>		Adjusted 1998 quota <sup>2</sup>		Final readjusted 1998 quota	
	lb	(kg) <sup>3</sup>	lb	(kg)	lb	(kg)
ME .....	5,284	2,397	4,791	2,173	4,791	2,173
NH .....	51	23	51	23	51	23
MA .....	757,841	343,751	721,889	327,448	721,899	327,448