



# Future Truck Program Position Paper: 2015-2

## *Future Driver Distraction Guidelines*

Developed by the Technology & Maintenance Council's (TMC)  
Future Cab and Driver Interface Task Force

### **ABSTRACT**

The issue of driver distraction in Class 7-8 commercial vehicles has two major components. First, the vehicle often contains multiple information/warning devices and systems which can be confusing and distracting. Second, interactive electronic devices and systems can be added or brought into the driver compartment. The compounding effect of excessive information, warnings and alarms within the interactive electronic devices can result in high levels of driver distraction. Accordingly, TMC's Future Truck Committee urges the development of industry-wide guidelines for the installation and use of these devices in Class 7-8 commercial vehicles. Until these industry-wide standards can be established, TMC recommends manufacturers, suppliers, and fleets take a common sense approach to these devices to minimize driver distraction.

### **INTRODUCTION**

This position paper focuses on the urgent and growing issue of driver distraction as it applies to the operation of Class 7-8 commercial vehicles. The National Highway Traffic Safety Administration (NHTSA) has stated that 17 percent of all police-reported crashes involve driver distraction. However, NHTSA's treatment of driver distraction issue differs significantly between passenger cars/light trucks and Class 7-8 commercial vehicles.

NHTSA has given high priority to establishing driver distraction equipment guidelines for pas-

senger cars and light trucks, but commercial vehicles have received little attention to date. TMC recommends that driver distraction in Class 7-8 trucks also warrants priority attention because of the more complicated demands of driving heavy trucks, as compared to passenger car/light trucks.

TMC has long raised concern regarding information overload associated with the proliferation of information systems, warning lights and alarms in the truck cab. The level of distraction has increased further with the advent of interactive electronic devices (mo-

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bile phones, navigation devices, dispatcher communication systems, etc.). Excessive information, warnings, and alarms, combined with the interactive electronic devices brought into the vehicle (both personal and company issued), has resulted in this higher potential for significant driver distraction. The goal of this position paper is to minimize driver distraction by promoting application of suitable Human Machine Interface (HMI) principles already cited in existing NHTSA guidelines.

## DISCUSSION

NHTSA defines distracted driving as any activity that could divert a person's attention away from the primary task of driving. Distractions can be:

- **Visual**—Tasks that require the driver to look away from the roadway to visually obtain information.
- **Physical**—Tasks that require the driver to take one or both hands off the steering wheel.
- **Cognitive**—Tasks that require the driver to avert attention away from the driving task.

Some tasks can involve one, two, or all three types of distraction.

Some examples of activities that can be distracting are tasks requiring interaction with technology such as texting, using a mobile phone, using a navigation system, interacting with a touch screen, adjusting a radio, CD player, or MP3 player, etc. Of course other non-technical activities can be distracting—such as eating while driving, looking at a map, grooming using a mirror, etc. The difficulty is in establishing how much distraction is excessive versus normal (e.g., using the radio).

Because text messaging requires excessive visual, manual and cognitive attention, it is by far the most alarming distraction. The Virginia Tech Transportation Institute (VTTI) found in

naturalistic vehicle studies that texting while driving raises the risk of a crash by 23 times. Sending or receiving a text message takes a driver's eyes from the road an average of 4.6 seconds — the equivalent of driving blind the length of a football field at 55 MPH. Accordingly, President Obama has issued an Executive Order banning all federal employees from text messaging while driving and many states and local municipalities have passed laws prohibiting texting.

While there is an almost universal agreement that texting or emailing while driving is unacceptable, there are differing opinions on the other uses of the smart phone or smart devices. For example, some have called for the banning of all mobile phone usage (both hand-held and hands-free) in all vehicles. Others have opposed banning hands-free devices, citing studies that show dialing is the issue rather than talking. One VTTI study revealed an increase of mobile phone use in the pre-dawn hours; one theory for this is that drivers are using the conversations to stay alert (i.e., not all cognitive activity is bad or distracting). Others point out that truckers are often the first to report an accident, using a mobile phone.

TMC's Future Cab and Driver Interface Task Force concluded that the problem is not necessarily the device function itself but the design of the interaction between the driver and the device. Reviewing the HMI research performed for passenger car and light truck, the Task Force proposes some common sense principles for Class 7-8 vehicles.

## FUNDAMENTAL PRINCIPLES

Modifying NHTSA's light vehicle distracted driving principles, TMC's Future Cab and Driver Interface Task Force proposes the following fundamental principles for Class 7-8 trucks:

1. The driver's eyes should predominately be looking forward at the road ahead and rearward through the mirrors.

2. The driver should be able to keep at least one hand on the steering wheel while performing any secondary task.
3. The distraction induced by any secondary task performed while driving should not exceed that associated with a baseline reference task (e.g., tuning or adjusting a radio).
4. Any task performed by a driver should be interruptible at any time.
5. The driver, not the system or device, should control the pace of task interactions.

These fundamental principles have application for fleets when establishing policies governing driver activity and for specifications regarding equipment and device procurement. For example, one fleet has established a policy that prohibits company employees from contacting a driver when the vehicle is traveling.

### **INTERIM GUIDELINES**

The Alliance of Automobile Manufacturers (AAM) coordinated research on the issue for passenger car and light truck and published the “Statement of Principles, Criteria and Verification Procedures on Driver-Interaction with Advanced In-Vehicle Information and Communication Systems.” By taking the lead in establishing reasonable guidelines, AAM reduced the risk of arbitrary action by NHTSA. In fact, when NHTSA published its federal guidelines, it acknowledged relying heavily on the AAM Guidelines. NHTSA chose not to issue a mandatory FMVSS standard but issued its Guidelines as voluntary—a decision some believe was due to industry taking responsible action on the issue.

Using the passenger car and light truck approach as a model, TMC proposes that the Truck Manufacturers’ Association (TMA) coordinate a similar activity for heavy truck. The Society of Automotive Engineers’ (SAE) Human Factors Committee has established a Driver Distraction Task Force and has the

appropriate technical specialists identified and involved. Industry-wide funding is required to perform testing to either confirm or modify the NHTSA and AAM Guidelines for heavy truck application. Until specific heavy truck research is conducted, similar comprehensive guidelines cannot be validated.

Lacking a definitive timing plan from NHTSA or the heavy truck industry in general, TMC proposes a common sense approach with the following interim recommendations:

- a. Limit device operation to one hand, leaving the other hand on the steering wheel.
- b. Limit to two seconds the time needed to look away from the road to operate a device.
- c. Limit the total time to complete the task to 12 seconds or a maximum of six, two-second glances.
- d. Limit the tasks requiring driver interaction to no more than one task requiring multiple glances within a 10-minute period.
- e. Limit unnecessary visual information in the driver’s field of view.
- f. Ensure visual displays are easy to see (even for older drivers) and content presented is easily discernible.
- g. Conduct an acceptance test of drivers using the device to verify the operation does not exceed the baseline task of using a radio.

### **RECOMMENDED ACTIONS**

TMC recommends the following actions:

1. TMA is urged to coordinate necessary funding to enable SAE’s Driver Distraction Task Force to complete its charter of establishing heavy truck guidelines on driver distraction.
2. Vehicle manufacturers and suppliers are requested to use TMC’s “Interim Guidelines” in assessing interactive devices and systems until the SAE Task Force completes its task.

3. TMC's S.4 Cab and Controls Study Group is encouraged to develop a recommended engineering practice to minimize driver distraction based on the interim guidelines listed in this paper.
3. Fleets are encouraged to establish strong policies using the fundamental principles and interim guidelines as a baseline.
4. Fleets are encouraged to use TMC's interim guidelines in assessing devices and systems to spec for their equipment.
5. Driver training should include awareness of this important issue and how to avoid distracted driving. 