

Remarks prepared for
David Strickland, Administrator
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“Every co-pilot needs a pilot”

Thank you, Melanie (Batenchuk, WAPA President). Good afternoon, everyone. It is a pleasure to be here today. It's taken some doing to sync up our calendars since the first time you invited me—but in hindsight, that was not a bad thing. We have so much more to talk about today, than even just three years ago.

First—what hasn't changed. NHTSA's framework of safety through which we view the world remains the same, as does our dedication to our mission of saving lives on the nation's roads and highways.

We continue to work across the spectrum of vehicle and behavioral issues to protect the American public, and help them make intelligent choices about their vehicles. We help them buy the safest and most suitable vehicle for their needs. We help them drive and maintain their vehicle so that they and their families feel safe when they get behind the wheel. And we hold automakers accountable for producing safe cars.

Just this morning NHTSA issued a rule in this area. Effective one year from now, major automakers and motorcycle manufacturers must provide recall information on vehicles online searchable by Vehicle Identification Number so that consumers can check to see whether a particular vehicle has been recalled but not remedied. Automakers will have to update that information at least once a week.

We will offer this search feature on our website www.safercar.gov as well. In this era of digital access, knowledge is power. By making individual VIN searches readily available, we're empowering the public to make informed choices. They can and should know that the car or truck they drive every day or are thinking of buying is safe.

We also work to encourage safe driver behavior. As many of you may know, driver error is a factor in over 90 percent of crashes in the United States. And even though the total numbers of deaths and injuries on our roads have declined over time, we still see 50 percent of deaths are unbelted. We still see a third of deaths are impaired. It's time for a meaningful cultural shift in this country toward how we behave when we climb behind the wheel.

At NHTSA we hope to harness technology to help effect that change—or at least move the needle. Because it's at the intersection of driver and vehicle—behavior and technology—that we see some extremely fast-moving and promising developments that I'd like to spend some time discussing. This intersection will reshape the vehicle fleet not unlike the arrival of the horseless carriage more than a hundred years ago.

Already, there is so much promise in many technological areas—both in development and implemented. We're seeing technologies that could significantly reduce fatalities and injuries as a result of motor vehicle crashes. The solutions range from very narrowly defined safety applications like lane departure warning to full-blown prototypes of automated vehicles.

The notion of a self-driving vehicle captures the imagination, doesn't it? Think of the technical pioneers lending their brain power to creating a George Jetson future. We're not quite there yet and we have some ground to cover.

Quite frankly, while driving a fully automated car may be one person's idea of Utopia, many people don't want that future. Some folks would rather see a future with extremely smart cars that assist the driver to avoid crashing.

As a regulator, a motor head, and a techno-file, I believe we cannot take the human out of the car – at least not in the foreseeable future. The car – no matter how automated – is not yet ready to be more than a co-pilot. And every co-pilot needs a pilot.

So before self-driving vehicles can roam our streets, we have to resolve some of the challenges these vehicles pose, including:

- Understanding and evaluating driver behavior in these vehicles;
- Developing performance requirements for the highly complex potential driving environments that they will encounter; and
- Ensuring that the systems (including sensors, maps, and software, etc.) are effective and reliable.

We're spending some time on this subject at NHTSA. Earlier this year, we released a "Preliminary Statement of Policy Concerning Automated Vehicles." In it we describe our research plans on this subject and the various levels of vehicle automation ranging from no-automation to full self-driving automation.

Feeding into that plan is the research we're doing, alongside of the auto industry and other DOT agencies on vehicle to vehicle communication. We believe V2V offers substantial crash avoidance potential, especially when linked to crash avoidance systems.

V2V's level of success will ultimately rest on the human factors and how the driver interacts with the system: in other words, the interface. The interface must produce a quick and appropriate reaction from the driver, without increasing the potential for distraction.

The vehicle communication safety applications must be effective at improving safety while not resulting in unintended consequences. The non-safety applications must be implemented so as not to increase the driver's workload or distraction which could increase the crash risk.

Key to our research is the human factors portion of the plan. This research has two primary goals: 1) to allow drivers to safely transition between automated and non-automated vehicle operation; and, 2) communicate relevant information to the safe operation of the vehicle effectively to the driver.

It's clear we need to innovate in the fleet. NHTSA's job is to ensure we find the right balance between car and driver. We don't want to create an over-reliance on systems. We also don't want to create a new set of behaviors by drivers that will require a whole new set of countermeasures.

So we're asking some questions to guide our work:

- We want to know if there is driver performance degradation in sustained (longer term) and short-cycle (shorter term) automation.
- We want to know what the risks are from interrupting the driver's involvement with secondary tasks when operating at higher levels of automation.

- And we want to know what the most effective hand-off strategies between the system and the driver are, including response to faults and failures.
- And lastly, we want to know what the most effective human-machine interface concepts are, guided by human factors best practices which optimize safe operation of the vehicle.

To underscore the importance of these questions, we need only look at driver distraction to see one of the best examples of how technology can change our behavior. Our research tells us that at any given daylight moment across America, approximately 660,000 drivers are using cell phones while driving.

In April, NHTSA developed voluntary guidelines and released Phase 1 Distraction Guidelines. Phase 1 guidelines apply to original in-vehicle electronic device interfaces. They establish specific recommended criteria for electronic devices installed in vehicles at the time of manufacture that require drivers to take their hands off the wheel or eyes of the road to use them. The guidelines also recommend disabling several operations, such as manual text entry, unless the vehicle is stopped and in park.

NHTSA is currently developing its Phase 2 Guidelines, which will address visual-manual interfaces for hand-held portable and aftermarket devices not built into the vehicle. Think aftermarket GPS navigation systems, smart phones, electronic tablets and pads, and other mobile communications devices.

We have begun discussions with the various portable and aftermarket device stakeholder groups and organizations and are eager for their input as we develop guidelines for hand-held devices.

The opposite side of the driver-technology intersection is the use of technology to curb behavior. Specifically, I want to discuss the 1/3 of fatalities due to driver impairment.

The Driver Alcohol Detection System for Safety, or DADSS, supports a non-regulatory, market-based approach to prevent drunk driving. The program focuses on developing non-invasive,

seamless technologies to measure driver blood alcohol levels and reduce incidences of drunk driving.

While impressive progress has been made to date, significant additional development is needed before the technology is ready for mass-production.

The devices under development and in testing must prevent alcohol-impaired drivers (BAC \geq 0.08) from driving their vehicles. For this approach to work, the device used must be able to measure alcohol accurately and reliably in a very short time (325ms) so the sober driver is not inconvenienced.

By early next year, a research vehicle that incorporates two different technological approaches to measuring BAC—touch-based and breath-based—will be complete.

This work was completed under a five-year cooperative research agreement with the Automotive Coalition for Traffic Safety that began in 2008. And because of the substantial progress made through this year, we expect to extend the agreement for another five years.

As you can see there is a lot of change and many challenges ahead for the auto industry as it integrates more and more technological innovation into the fleet. For this to be successful, we must be sure the technology is robust, reliable and secure. It must fulfill the requirements for safety, privacy, security, and consumer acceptance.

Ahead of us still is development of performance specifications and non-traditional methods to measure that performance. It's a challenge: There are no developed methods for doing this. We may need to depend on modeling and simulation of detailed traffic interactions that lead to crashes.

However substantial the challenges, NHTSA is ready to guide this future. Our research will be thorough, and we will partner with industry to work together to get it right—the first time. There is no other way. In spite of all the questions and the work yet to be done, the excitement is palpable. We are on the brink of an amazing era in automotive safety.

Thank you.