DISRUPTER SERIES: SELF-DRIVING CARS

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMERCE, MANUFACTURING, AND TRADE

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

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DISRUPTER SERIES: SELF-DRIVING CARS

TUESDAY, NOVEMBER 15, 2016

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COMMERCE, MANUFACTURING, AND TRADE,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:30 a.m., in room 2122 Rayburn House Office Building, Hon. Michael Burgess (chairman of the subcommittee) presiding.

Members present: Representatives Burgess, Lance, Blackburn, Guthrie, Kinzinger, Bilirakis, Brooks, Mullin, Schakowsky, Kennedy, Cárdenas, and Pallone (ex officio).

Staff present: Elena Brennan, Staff Assistant; Karen Christian, General Counsel; James Decker, Policy Coordinator, Commerce, Manufacturing, and Trade; Blair Ellis, Digital Coordinator/Press Secretary; Melissa Froelich, Counsel, Commerce, Manufacturing, and Trade; Giulia Giannangeli, Legislative Clerk, Commerce, Manufacturing, and Trade; A.T. Johnston, Senior Policy Advisor; Paul Nagle, Chief Counsel, Commerce, Manufacturing, and Trade; Dan Schneider, Press Secretary; Olivia Trusty, Professional Staff, Commerce, Manufacturing, and Trade; Michelle Ash, Minority Chief Counsel, Commerce, Manufacturing, and Trade; Jeff Carroll, Minority Staff Director; David Goldman, Minority Chief Counsel, Communications and Technology; Rick Kessler, Minority Senior Advisor and Staff Director, Energy and Environment; Caroline Paris-Behr, Minority Policy Analyst; Matt Schumacher, Minority Press Assistant; and Andrew Souvall, Minority Director of Communications, Outreach and Member Services.

OPENING STATEMENT OF HON. MICHAEL C. BURGESS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BURGESS. The subcommittee on Commerce, Manufacturing, and Trade will now come to order. The chair recognizes himself for 5 minutes for an opening statement.

Good morning all, and welcome to today's Disrupter Series hearing on self-driving cars, a groundbreaking technological development that has the potential to completely transform and redefine the vehicle and transportation system that we know and understand today.

Because this may be the last time that we have the privilege of having Dr. Rosekind before our subcommittee, let me first thank him for his service. He has always cooperated with this committee and we have continued to improve the agency, the recall process

and, although it has been a big task, I believe improve safety. Thank you, Dr. Rosekind, for your service.

Self-driving cars promise to be the most significant automobile-related safety development in our lifetimes. This hearing will kick off what I expected to be a major focus of this subcommittee really for years to come and the reason is simple. Last year, automobile-related fatalities were around 35,000 and rose for the first time in nearly a decade. My home State of Texas was about ten percent of that: 3,516. The vast majority of those fatalities are still related to human behavior. Already, we have heard that fatalities are up again for the first half of this year. Truly self-driving cars are not about to be deployed in any great numbers anytime soon but the sooner we can safely get them to market, the sooner we can start saving lives. I, for one, am not among those who are worried that the adoption of this new technology will outpace safety. It will not be broadly adopted before it is ready. Our job is to be really smart and identify a path forward where the government can provide a cop on the beat for the industry and respond quickly where safety incidents arise. But we cannot let the government paralyze the very innovation that promises to make us safer.

I think National Highway Traffic Safety Administration's recent guidance is well-meaning. We obviously worry greatly about its implementation. Waiting for the government to approve technology is never a good formula. That said, we must remain vigilant in areas like cybersecurity where industry must be held accountable if they are not taking reasonable measures.

In addition to safety, self-driving cars promise a reduction in fuel emissions and energy consumption as a result of improved mobility and more efficient traffic flows. Self-driving vehicles may also allow for more efficient land use instead of wasting resources on parking in city lots. We can also expect to see an increase in transport and mobility opportunities such as ride-hailing and rise-sharing services; opportunities for labor cost savings; improved transportation access for disabled, elderly, and underserved populations; and other enhancements that improve the societal and economic welfare of communities across the country. This is what makes the development and deployment of autonomous cars so exciting: their impact will be virtually limitless.

As Dean Kamen reminded all of us at our last Disrupter Series hearing, we cannot afford to let the perfect be the enemy of the good. That means allowing innovators to innovate, allow them to develop the technology and give them the flexibility to test its potential. Preemptive action on the part of regulators before gaining a full understanding or appreciation of self-driving cars may lead to unintended consequences that limit the capabilities of this emerging technology and its promised life-saving, economic, and societal benefits.

I want to thank our witnesses for taking the time to inform us about this technology and I look forward to a thoughtful and engaging discussion.

[The opening statement by Mr. Burgess follows:]

PREPARED STATEMENT OF HON. MICHAEL C. BURGESS

Good morning and welcome to today's Disrupter Series hearing on self-driving cars—a groundbreaking technological development that has the potential to completely transform and redefine the vehicle and transportation system we know and understand today.

Because this may be the last time we have Dr. Rosekind before us, let me first thank him for his service. He has always cooperated with this Committee as we have worked to improve the agency, the recall process, and improve safety. Thank you.

Self-driving cars promise to be the most significant automobile related safety development in our lifetime. This hearing will kick off what I expect to be a major focus of this subcommittee in the years to come. The reason for that is simple. Last year, automobile related fatalities were around 35,000 and rose for the first time in nearly a decade. In my home state of Texas, the number was 3,516. The vast majority of those fatalities are still related to human behavior. Already, we have heard that fatalities are up again in the first half of this year.

Truly self-driving cars are not about to be deployed in any great numbers anytime soon. But the sooner we can safely get them to market—the sooner we start saving lives. I, for one, am not among those who are worried that adoption of this new technology will outpace safety. It will not be broadly adopted before its ready. So our job is to be really smart and identify a path forward where government can police industry and respond quickly where safety incidents arise. But we cannot let government paralyze the very innovation that promises to make us safer.

I think NHTSA's recent guidance is well meaning. But I do worry greatly about its implementation. Waiting for the government to approve technology is never a good formula. That said we must remain vigilant in areas, like cybersecurity, where industry must be held accountable if they are not taking reasonable measures.

In addition to safety, self-driving cars promise a reduction in fuel emissions and energy consumption as a result of improved mobility and more efficient traffic flows. Self-driving vehicles may also allow for more efficient land use instead of wasting resources parking in city lots. We can also expect to see an increase in transport and mobility opportunities such as ride-hailing and ride-sharing services; opportunities for labor cost savings; improved transportation access for disabled, elderly, and underserved populations; and many other enhancements that improve the societal and economic welfare of communities across the country. This is what makes the development and deployment of autonomous cars so exciting: their impact will be virtually limitless.

As Dean Kamen reminded all of us at our last Disrupter Series hearing: we cannot let the perfect be the enemy of the good. That means allowing innovators to develop the technology and giving them the flexibility to test its potential. Preemptive action on the part of regulators, before gaining a full understanding or appreciation of self-driving cars, may lead to unintended consequences that limit the capabilities of this emerging technology and its promised life-saving, economic, and societal benefits. I thank the witnesses for taking the time to inform us about this technology and I look forward to a thoughtful and engaging discussion.

Mr. BURGESS. Let me yield back my time and recognize the vice chairwoman of the full committee for 5 minutes for an opening statement.

OPENING STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mrs. BLACKBURN. Thank you, Mr. Chairman. And Dr. Rosekind, I want to say thank you to you. I join the chairman in thanking you for your service and for taking the time to be here.

The issue that we are looking at today and as a part of our Disrupter Series is something that is really important to my constituents in Tennessee because you have the General Motors Spring Hill Plant that is in my district. They are doing much of the green tech innovation. You also have the Nissan North America that is

located in my district and then on the outskirts of our district, we have the Toyota Bodine Engine plant.

Now, as I talked to the innovators and the engineers that are working on these next generation concepts, they repeatedly remind me that automobiles are now driving computers and that we need to recognize that and be mindful of it.

And as we look at the Internet of things, of course it is well-placed but as we view this, we also view the necessity for safety and the technology that will make cars safer or help to make them safer will bring forward some of the driverless components, have those interface with the marketplace. Those are issues that are going to be important to us. Reducing fatalities on the road is something that we are very interested in. And when you hear that the self-driving or driverless-directed components can reduce, has the potential to reduce fatalities by 90 percent, that is something, as a mother and a grandmother, that really interests me because we all want to have those opportunities to make vehicles safer.

So, I think you for the time, Mr. Chairman. I thank you for going ahead and moving forward with this hearing and I yield back the balance of my time.

Mr. BURGESS. The chair thanks the gentlelady. Does anyone else on the Republican side seek time for an opening statement? Seeing none, we are going to depart from regular order. Dr. Rosekind, just I will ask you to go ahead with your opening statement. I will not interrupt you when members of the Democratic side arrive. They will then be recognized for opening statements but my intention is to allow you to deliver your entire remarks before we do that.

We do want to thank all of our witnesses for being here today and taking the time to testify before the subcommittee. Today's hearing will consist of two panels. Each panel of witnesses will have an opportunity to give an opening statement, followed by a round of questions by members. Once we conclude with questions of the first panel, we will take a brief recess to set up for the second panel.

Our first panel for today's hearing is Dr. Mark Rosekind, the Administrator at the National Highway Traffic Safety Administration. We appreciate you being here today. We will begin the panel with Dr. Rosekind and you are now recognized for 5 minutes for your opening statement.

STATEMENT OF MARK ROSEKIND, PH.D., ADMINISTRATOR, U.S. DEPARTMENT OF TRANSPORTATION, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Mr. ROSEKIND. Chairman Burgess, Ranking Member Schakowsky, members of the committee, thank you for holding this meeting and for inviting me to testify.

At NHTSA, our mission is to save lives on America's roadways, and for 50 years we have carried out that mission by writing and enforcing regulations to make vehicles safer, fighting against drunk driving, building a national consensus about seatbelt use, and so many other efforts that have saved hundreds of thousands of Americans on our roadways but we have far more work to do and that work can be measured by some very alarming numbers.

In 2015, we lost 35,092 people on our public roads. And at NHTSA we know that that is not just a number. Those are mothers and fathers, brothers and sisters, coworkers, friends, colleagues. And the problem is getting worse. Last month, we announced that roadway fatalities in the first half of this year are up over ten percent.

And it is against this backdrop that the Department of Transportation, under the leadership of Secretary Anthony Foxx, has been working so hard on our efforts to accelerate the safe deployment of automated vehicle technologies. Because while automated vehicles carry enormous potential to transform mobility and reshape our transportation system, it is their awesome potential to revolutionize roadway safety that has us to motivated.

And there is one more number that helps explain why. That number is 94. That is the percentage of crashes that can be tied back to a human choice or error. That is a choice to speed or drive drunk, to send a text message from behind the wheel, or misjudge the stopping distance. That 94 percent represents the untold potential of automated vehicle safety technologies. We envision a future where advanced technologies not only help reduce crashes but a world with fully self-driving cars that hold the potential to eliminate traffic fatalities altogether.

The Federal Automated Vehicles Policy, which the Department issued on September 20th, is the world's first comprehensive government action to guide the safe and efficient development and deployment of these technologies.

And the policy covers four areas: One, vehicle performance guidance for automakers, tech companies, researchers and other developers, testers, and deployers of automated vehicle technologies; two, a model state policy to build a consistent national framework for the testing and operation of automated vehicles; three, an exploration of the use of our current regulatory tools that can be used to advance these technologies; and four, a discussion of possible new tools that the Federal government may need to promote the safe deployment of advanced technologies as the industry continues to develop.

I would like to share just a few thoughts about our approach. For 50 years, our traditional approach has largely been reactive. NHTSA prescribed safety standards and then responds to problems as they arise.

A traditional method of regulating these new technologies would be to engage solely in the rulemaking process, writing new regulations that prescribe specific standards, and typically, take years to take effect. Our view is that that approach would be slow. It would stymie innovation and it would stall the introduction of these new safety technologies.

Our policy takes a different path built on proactive safety which will better serve both safety and innovation. This policy allows us to work with automakers and developers on the front end to ensure there are sound approaches to safety throughout the entire development process.

This is a new approach and it is going to take some adjustment for everyone involved but we are confident that it will help us to accomplish two specific goals: first, to make sure that new tech-

nologies are deployed safely; and second, to make sure we don't get in the way of innovation. Our approach is not prescriptive. It does not tell developers how they must provide safety but, instead, builds a transparent and proactive approach to ensure that they are properly addressing the critical safety areas.

But that future is not without threats. As President Obama wrote when announcing the policy, "the quickest way to slam the brakes on innovation is for the public to lose confidence in the safety of new technologies. Both government and industry have a responsibility to make sure that doesn't happen."

It is our view the best way we can build that public confidence is by working together, showing the public that the government is on the side of innovation and that the industry is on the side of safety.

I will submit the balance of my statement for the record and I look forward to taking your questions. Thank you.

[The statement of Mr. Rosekind follows:]

Dr. Mark Rosekind
Administrator, National Highway Traffic Safety Administration
U.S. Department of Transportation
Hearing of the U.S. House Energy & Commerce Committee
Subcommittee on Commerce, Manufacturing and Trade
Tuesday, November 15, 2016

Chairman Upton, Chairman Burgess, Ranking Member Schakowsky, and Members of the Committee:

Thank you for holding this hearing and inviting me to testify. My name is Mark Rosekind, and I am the Administrator of the National Highway Traffic Safety Administration, or NHTSA.

At NHTSA, our mission is to save lives on America's roadways. For 50 years, we have carried out that mission by writing and enforcing strong regulations to make vehicles safer, fighting against drunk driving, building a national consensus about seatbelt use, and so many other efforts that have saved hundreds of thousands of Americans.

But we have far more work to do. And that work can be measured by some alarming numbers.

In 2015, we lost 35,092 people on our public roads. At NHTSA, we know that is not just a number. Every one of those is a mother or father, a son or daughter, a coworker, a friend. In the United States, we lose the equivalent of a fully-loaded 747 on our roadways every single week.

And the problem is getting worse. Last month we announced that roadway fatalities in the first half of this year are up over 10 percent.

It is against this backdrop that the Department of Transportation, under the leadership of Secretary Anthony Foxx, has been working so hard on our efforts to accelerate the safe deployment of automated vehicle technologies.

Because while automated vehicles carry enormous potential to transform mobility, reshape our transportation system and transform our economy, it is their awesome potential to revolutionize roadway safety that has us so motivated.

And there is one more number that helps explain why. That number is 94. That is the percentage of crashes that can be tied back to a human choice or error. That's a choice to speed or drive drunk, to send a text message from behind the wheel or misjudge the stopping distance.

And that 94 percent figure represents the untold potential of automated vehicle technologies. We envision a future where advanced technologies not only help reduce crashes, but also make possible a world in which fully self-driving cars hold the potential to eliminate traffic fatalities altogether.

The Department of Transportation views this moment as the cusp of a new technological revolution that may transform roadway safety forever.

The Federal Automated Vehicles Policy, which the Department and NHTSA issued in mid-September, is the world's first comprehensive government action to guide the safe and efficient development and deployment of these technologies. Today, I will discuss that Policy, how we developed it, and where we are going next.

In January of this year, Secretary Foxx made two important announcements.

First, he announced that President Obama was making a $3.9 billion budget request for automated vehicles research. This is a major commitment from the Administration to advance this technology, and DOT continues to strongly support this request.

Second, he directed NHTSA to write a new policy covering four areas: One, vehicle performance guidance for automakers, tech companies, researchers and other developers and testers of automated vehicle technologies. Two, a model state policy to build a consistent national framework for the testing and operation of automated vehicles. Three, an exploration of the use of our current regulatory tools that can be used to advance these technologies. And four, a discussion of possible new tools that the Federal government may need to promote the safe deployment of advanced technologies as the industry continues to develop.

Over the subsequent nine months, NHTSA hit the road, traveling to discuss automated vehicles with industry, academics, State governments, safety and mobility advocates, and the public. This Policy is the product of that significant input.

Before discussing the individual components, I would like to share a few thoughts about our approach.

First it is important to understand our traditional approach to regulating motor vehicles. For 50 years, our approach has largely been reactive. NHTSA has prescribed safety standards, and then responded to problems as they arise.

A traditional approach to regulating these new technologies would be to engage solely in rulemaking process, writing new regulations that prescribe specific standards. Our view is that approach would stymie innovation and stall the introduction of these technologies.

It would also be a long process. Rulemakings, and the research necessary to support them, take years, meaning that any rule we might offer today would likely be woefully out-of-date by the time it took effect, given the pace of technological development in this space. Let me be clear that using the notice-and-comment rulemaking process to establish new standards will absolutely play an important role as this technology matures and is adopted. But it is not the only tool in our bag, and we have created an innovative approach that will better serve both safety and innovation in the immediate term.

Our Policy represents a continuation of the new proactive safety approach that we have built at NHTSA under the leadership of Secretary Foxx. This Policy allows NHTSA to work with automakers and developers on the front end, to ensure that sound approaches to safety are followed throughout the entire design and development process. This is a new approach, and it's going to take some adjustment for everyone involved. But we are confident that it will help us accomplish two goals: first, to make sure that new technologies are deployed safely; and second, to make sure we don't get in the way of innovation.

As the Federal regulator with the responsibility of ensuring vehicles are as safe as they can possibly be, we play an important role on behalf of the American public to ensure that vehicle technologies do not present safety threats.

At the same time, we recognize the great lifesaving potential of these new technologies, and want to do everything we can to make sure that potential is fully realized and that they are deployed as quickly as possible to save as many lives as we can.

Some people have talked about safety and vehicle automation as on the opposite ends of a spectrum, as if there were a trade-off between safety and innovation. But at the Department of Transportation, we view our role as promoting safety innovation. Our Policy is designed to promote the safe and expeditious deployment of new technologies that have the potential to reduce crashes and save lives.

Our approach is not prescriptive. It does not tell developers *how* they must provide safety, but instead it builds a transparent and proactive approach to ensure that they are properly addressing the critical safety areas.

Finally, I want to be clear that while this Policy establishes an important framework for the development and deployment of automated vehicles, it is not the final word. In our view, this Policy is the right tool at the right time. It answers a call from industry, State and local governments, safety and mobility advocates and many others to lay a clear path forward for the safe deployment of automated vehicles and technologies.

But we intend this Policy to evolve over time. That evolution will be based on comments we receive from the public, our own experience in implementing it over the coming months and years, and, perhaps most importantly, based on the rapid evolution of the technology itself. We have designed this Policy to be nimble and flexible, to allow us to stay at the leading edge of this revolution.

Before I discuss each component of the Policy, allow me to say a few words on definitions.

First, it is important to note that with this Policy, we are officially adopting the SAE International levels of automation, ranging from zero to five. The primary focus of the Policy overall is on what we refer to as "highly automated vehicles", or HAVs. Those are vehicles at levels three through five on the SAE level scale, or vehicles that—at least in some circumstances—take over full control of the driving task. A portion of the first section of the Policy also applies to Level 2 vehicle systems, which include advanced driver-assistance systems already on the road today.

The Policy covers all automated vehicles that are designed to operate on public roads. That includes personal light vehicles, as well as heavy trucks. It even includes vehicles that might be designed to not carry passengers at all.

Finally, I note that most of the Policy is effective immediately. We expect that developers and manufacturers of AV technologies will use the Policy to guide their safety approach. Some portions of the Policy—notably the Safety Assessment Letter in the Vehicle Performance Guidance—will become effective following a Paperwork Reduction Act process that we expect to be completed within the next few months.

Vehicle Performance Guidance for Automated Vehicles

The first section is the Vehicle Performance Guidance for Automated Vehicles. This is guidance for manufacturers, developers and other organizations involved in the development of automated vehicles. The heart of the Guidance is a 15 point "Safety Assessment" that spells out the critical safety areas that developers should address for the safe design, development, testing and deployment of highly automated vehicles prior to the sale or operation of such vehicles on public roads.

The Safety Assessment covers areas such as the operational design domain—essentially the where and when an AV is designed to operate automatically—fallback conditions, cybersecurity, privacy, and the human-machine interface.

We identified these areas through our extensive consultations with industry, academia and advocates as the critical safety issues that must be addressed to ensure that automated technologies are safe.

Critically, the Guidance does not specify *how* AV developers are intended to address the areas. Instead, the Guidance asks developers to document their own processes and then provide NHTSA with a Safety Assessment letter in which they explain their approach. This process is expected to yield a variety of different approaches for every one of the areas. That is intentional, and is one of the ways that we are preserving and promoting the innovation process. Government does not have all the answers, and our view is that the more approaches that innovators take to solving these problems, the more likely we are to find the best way.

Model State Policy

The second section is the Model State Policy.

For the last 50 years, there has been a fairly clear division of responsibility between the Federal government and the States for the oversight and regulation of motor vehicles. Generally speaking, it has been the Federal government's responsibility to regulate motor vehicles and equipment safety, while the States have regulated drivers and traffic laws.

That division of responsibility may be less clear in a highly automated vehicle world where increasingly the vehicle's automated systems become the driver.

The Model State Policy delineates the Federal and State roles for the regulation of these vehicles, and it outlines the approach we recommend to States as they consider the regulation of testing and operation of automated vehicles on their public roads. Our goal is to build a consistent national framework for the development and deployment of automated vehicles, so that users can take their vehicles across state lines as they can today, and so that developers are building toward a single set of standards, rather than 50.

The Model State Policy confirms that States retain their traditional responsibilities for vehicle licensing and registration, traffic laws and enforcement, and motor vehicle insurance and liability regimes. At the same time, the Policy reaffirms that the Federal government will continue to be responsible for the oversight of vehicle safety and design, including automated features.

The Policy was developed in close coordination with the American Association of Motor Vehicle Administrators (AAMVA), individual States and other stakeholders. It suggests recommended areas for States to consider in the development of their own regulations, including testing regimes and registration. It also identifies a number of areas that need to be further discussed and developed, including how law enforcement will interact with highly automated vehicles, and the development of a consistent approach to insurance and liability challenges. We also note in the Policy that States do not have to take any action at all.

NHTSA's Current Regulatory Tools

The third section addresses NHTSA's Current Regulatory Tools. This section discusses how NHTSA will use the tools currently at its disposal to promote and expedite the safe development and deployment of highly automated vehicles.

The first of those tools discussed is our interpretation authority. The current Federal Motor Vehicle Safety Standards generally do not contemplate automated vehicle technologies. Therefore, it can sometimes be unclear how those standards apply to advanced technologies. In this section, we lay out the process by which developers of AV technologies can submit interpretation requests to the agency to determine whether and how their technologies conform with the standards. The agency also commits to a greatly expedited process for reviewing these interpretation requests. On simple safety-related interpretation requests, we commit to providing answers within 60 days. Compared to historical norms, that is lightning speed.

The second tool discussed is our exemption authority. Congress has granted NHTSA the authority to provide exemptions to manufacturers to deploy vehicles that do not conform to the Federal Motor Vehicle Safety Standards. While these exemptions are admittedly limited—to 2,500 vehicles for each of two years—the Agency views this tool as an important way of enabling a manufacturer to put a test fleet on the road to gather critical safety data and improve its technologies. The Policy similarly commits to an expedited process on simple safety-related exemptions, providing an answer within six months from the application.

The Agency's broadest power is its ability to write new safety standards. While this tool tends to take the longest amount of time—usually a period of years—it is the method that will ultimately allow for the large-scale deployment of nontraditional vehicle designs and equipment under consistent, broadly applicable standards. In addition, to the extent that performance-based standards are adopted, this tool has the potential to allow for technological innovation while maintaining safety.

In this section, we also highlight that the Agency retains its broad defects and enforcement authority. We use that authority to investigate any unreasonable risks to safety, and to recall unsafe vehicles from the road. The same day NHTSA issued the Policy, we also issued an Enforcement Guidance Bulletin that makes clear that the Agency's traditional enforcement authorities extend to advanced vehicle technologies.

Modern Regulatory Tools

The fourth and final section of the Policy discusses Modern Regulatory Tools, identifying 12 potential new tools, authorities and resources that could aid the safe deployment of new lifesaving technologies and enable the Agency to be more nimble and flexible.

Today's governing statutes and regulations were developed before highly automated vehicles were even a remote notion. For that reason, current authorities and tools alone may not be sufficient to ensure that highly automated vehicles are introduced safely, and to realize their full safety promise. This challenge requires NHTSA to examine whether the ways in which the Agency has addressed safety for the last several decades should be expanded and supplemented.

The new tools identified in this section include premarket approval, expanded exemption authority, imminent hazard authority, new research and hiring tools, and others that may better equip the Agency in the future as more technologies move from the lab to the road. These tools are offered for consideration by policymakers, industry, advocates and the public as we move forward.

One thing we know for certain is that the agency will need additional resources as this technology develops and is adopted. I have great confidence in the NHTSA team's expertise and ability. But it is undeniable that as more automakers move technology from the lab to the test track to the road, we will need to make sure our Agency is properly resourced to maintain pace.

We continue to support the President's budget request for more research dollars, and are committed to working with you in the coming months and years to identify what resources—both in personnel and research funding—will be necessary to achieve our mission.

Next Steps

Finally, with respect to the Policy, I would like to highlight once again that we fully intend this Policy to be the first iteration of many to come. The Policy is effective now, and will continue to evolve based on feedback and our experience implementing it, and, most importantly, to keep

pace with innovation. To that end, each section of the Policy highlights a series of next steps that we will take to implement and improve the Policy over time.

The first is our solicitation of public input. We are doing that through an open comment period that is open now through November 22nd. NHTSA is also hosting a series of public workshops that began earlier this month on different sections of the Policy. I will note here that the full Policy, additional materials, and the portal for public comments can be found at www.nhtsa.gov/AV.

Over the coming months we will be engaging experts to review the Policy, issuing further guidance on the Safety Assessment letter, and engaging stakeholders across the spectrum to help flesh out other areas of the Policy. For example, we will work with law enforcement organizations to further the conversation about how AVs will interact with the police, and work with industry to build the framework for the data sharing discussed in the Vehicle Performance Guidance. We are also engaged with other operating modes throughout the Department of Transportation, recognizing the roles and responsibilities they play with respect to public transit, commercial freight operations, and the highway system on which automated vehicles will operate.

We do not pretend to have answered every question in this Policy, and we will continue the conversation with the public about the best ways to develop and improve our Policy as we learn more. To that end, the Department of Transportation has committed to reviewing and updating the Policy annually.

As I conclude, I want to say a few words about the importance of the present moment in history. We have an industry that is rapidly developing innovative new technologies. And we have a government that is inspired and excited about the future of this technology.

But that future is not without threats. Bad actors or bad incidents could threaten to derail our collective efforts.

I want to close with the words President Obama used when he announced our new Policy in an op-ed in the Pittsburgh Post-Gazette. He wrote, "There are always those who argue that government should stay out of free enterprise entirely, but I think most Americans would agree we still need rules to keep our air and water clean, and our food and medicine safe. That's the general principle here. What's more, the quickest way to slam the brakes on innovation is for the public to lose confidence in the safety of new technologies. Both government and industry have a responsibility to make sure that doesn't happen."

It is our strong view that the best way we can build that public confidence is by working together, showing the public that the government is on the side of innovation and the industry is on the side of safety. We encourage you to join with us as we continue to develop this Policy and show the American public that their safety is the highest priority for all of us.

Thank you.

Mr. BURGESS. The chair thanks the gentleman. Now, as I previously outlined, we will go back to member opening statements and Ms. Schakowsky is recognized for 5 minutes for an opening statement, please.

OPENING STATEMENT OF HON. JANICE D. SCHAKOWSKY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Ms. SCHAKOWSKY. I thank you, Mr. Chairman. I really apologize for being late this morning and I thank you for accommodating that and I look forward to the questions that we can ask of our witness.

I first want to take a moment to recognize a great loss in the auto safety community. On Thursday, Clarence Ditlow of the Center for Auto Safety passed away after a battle with cancer. For 40 years, Clarence led the Center for Auto Safety, where he was a tireless advocate for stronger and stronger auto safety standards. He fought for Lemon Laws to ease return of defective vehicles in all 50 states. And if you have ever had a recall on your vehicle, there is a decent chance Clarence was somehow involved in pushing the National Highway Traffic Safety Administration and automakers to take action. He provided tremendous insight to lawmakers over the years, including, as a witness before this very subcommittee.

Clarence continued fighting for consumers until his final days. As recently as September, he was working with my office on reducing the number of used cars sold with open recalls. He even weighed in on today's topic. In August, he wrote an op-ed on the importance of strong safety standards for self-driving cars. Clarence has an outstanding legacy but I know he saw much work still to be done. I can think of no better a tribute than to continue his fight to improve auto safety and I hope we can do so on this subcommittee.

Protecting consumers must be the key focus as we consider today's topic, self-driving cars. A car without a human driver could be an exciting development or a frightening proposition. Which one it is depends on whether we take the correct approach to the development of this technology.

One of the key arguments in favor of self-driving cars is safety. According to NHTSA, 94 percent of car crashes are caused, in part, by driver error. Automation does have the potential to help, ensuring that autonomous vehicles improve safety requires thorough testing and oversight. We must evaluate not only how the vehicles' features work but also the effect of those features on human behavior.

I appreciate NHTSA's efforts to be proactive in its approach to autonomous vehicles and I look forward to learning more about how its policy framework will work in practice.

As we think about the long-term potential of safe-driving cars, we also need to consider the intermediate challenge. We are not going to shift to 100 percent self-driving vehicles overnight. Even if this technology is adopted relatively quickly, we will see a transition period where traditional semi-autonomous and fully autonomous vehicles share the road. All those vehicles and their pas-

sengers must be able to safely interact. We should also recognize the impact the self-driving cars have on those who drive for a living, taxi drivers, chauffeurs, delivery men and truck persons, and truckers.

Automakers are still working through safety issues with autonomous vehicles. For example, two self-driving Teslas crashed this year. Cybersecurity is another critical area for autonomous vehicles to be successful. Hacking a self-driving car could put lives in danger. Developers must take the utmost precautions to prevent the cars' systems from being compromised and providing failsafe mechanisms of security measures are ever ineffective.

Accidents involving self-driving vehicles raise new questions. How safe must self-driving cars be before we are comfortable having them on the road? When something goes wrong, when is it the fault of the manufacturer and when is it the fault of the user? NHTSA is adapting its traditional approach to auto safety as it considers the design, use, and safety features of self-driving vehicles. I welcome this initiative but I want to ensure that safety remains paramount.

I also want to hear a firm industry commitment to safety and cybersecurity. As I said, innovation in self-driving cars has tremendous potential. If done right, this technology could save lives, increase energy efficiency, and provide convenience for consumers. We must make sure that the right policies are in place to achieve the maximum benefit from this technology. And again, I appreciate your indulgence and I yield back.

Mr. BURGESS. The gentlelady yields back. The chair thanks the gentlelady.

Is Mr. Kennedy likely to be coming back or can we proceed with questions? Very well.

And Dr. Rosekind, we thank you for your testimony. We will move into the question and answer portion of the hearing. I am going to begin the questioning by yielding to Leonard Lance from New Jersey for his questions.

Mr. LANCE. Thank you, Mr. Chairman. And good morning to you, Dr. Rosekind. I thank you and the other distinguished members of our panels who are appearing before us today on this important topic. And certainly, I thank you for your distinguished public service, Dr. Rosekind.

Automobile accidents accounted for over 35,000 fatalities in 2015, as you have indicated; 562 of those souls lost were from the State of New Jersey. By removing driver error, which accounts for the vast majority of these deaths, autonomous vehicles have the potential to be the single greatest achievement in auto safety in our lifetime, savings tens of thousands of lives each year.

As the subcommittee with jurisdiction over this topic and over the automotive industry, it is our job to make sure that innovation is allowed to occur and is not hindered by burdensome and unnecessary regulation while, of course, ensuring consumer safety which is paramount.

Dr. Rosekind, the guidance states that it is not intended for states to codify as legal requirements for the development, design, manufacture, testing, and operation of automated vehicles. That is

on page 11 of the guidance. Do you think that states should be codifying the guidance as some have signaled they intend to do?

Mr. ROSEKIND. As you have already cited the specific quote, and that was intentional to put in there, was for states not to codify. What you have highlighted was everyone wants to see a consistent national framework. Nobody wants a patchwork. And so what is critical right now is to really distinguish the Federal role and the state role and making sure for the moment that people are focused on the safest possible deployment within those Federal and state rules.

Mr. LANCE. What would happen, in your professional judgment, if one state were to deem a self-driving automobile to be safe for testing and deployment but another state chooses to go in the completely opposite direction? It seems to me that would be quite a challenge but having served in a state legislature, having been the minority leader in our state senate in Trenton, I am aware that there are state responsibilities as well. And how should we go through this challenging situation to make sure that safety is paramount and innovation occurs to make sure that deaths can be fewer than is now the case?

Mr. ROSEKIND. So, that highlights the patchwork concern, which is all of us drive across this great country without worrying about what driver's license you have from your state or that the car is even legal in that state. Just think if an autonomous self-driving car stopped at every state line because it wasn't allowed there, or that every manufacturer or developer had to have 50 different approaches to dealing with, so again, that is why everybody wants to avoid that patchwork.

Right now, I think the clarity of what the federal role is and the state role is the way to go. We have seen California wait for this policy to come out, make adjustments to try and be in line. We did the policy in collaboration with the American Association of Motor Vehicle Administrators, all 50 DMVs and we will continue to work with the states. But you have brought up an ongoing vulnerability here, as we move forward.

Mr. LANCE. Are there certain states that are more likely than others to advance state initiatives, perhaps California, perhaps other states as well? And should we be discussing this with various state capitals or should our congressional delegations be discussing this with various state capitals?

Mr. ROSEKIND. We hope everyone is going to be discussing this. One of the things that you are highlighting is that there are some states that are really on the leading edge of this, California, Michigan, Pennsylvania, Florida, District of Columbia actually has some work as well. And so there are a lot of ongoing discussions that are happening now.

I think the intent is for people to make sure they understand the policies and guidance in this area. And one of the things for all the states to understand, we try to make explicit, is states actually don't have to do anything in this area. There is no action needed for testing of deployment at this stage. If you are interested, as a state, then this policy outlines the Federal and state roles.

Mr. LANCE. Dr. Rosekind, you mentioned Michigan, Florida, and Pennsylvania. I have nothing bad to say about any of those three states this week, Dr. Rosekind.

The Federal Automated Vehicle Policy mentions the possibility of convening a commission to study liability insurance issues. Do you have a view on that?

Mr. ROSEKIND. I think that is a great example of in the Secretary's letter in the beginning he really highlights there are a lot of unknowns that have to become known. So that is a specific example of how do we handle liability. If we don't come out with the answer, we suggest a commission that would deal with that for the states to understand the best way forward.

Mr. LANCE. Thank you very much, Dr. Rosekind, and my time has expired.

Mr. BURGESS. The chair thanks the gentleman. The gentleman yields back. The chair now recognizes the gentlelady from Illinois, Ms. Schakowsky, 5 minutes for questions, please.

Ms. SCHAKOWSKY. Dr. Rosekind, I first wanted to thank you for your service as Administrator of NHTSA. I appreciate being able to work with you. I don't know but this may be your last time testifying before this committee as part of the Administration and I just want to thank you very much for the work that you have done and for consumers and working with this subcommittee.

So, I have two questions. I am going to ask them together and then leave the time to you.

While the expected benefits of automated vehicles have been widely discussed, so, too, have their technological shortcomings, reports indicated that potholes, construction, pedestrians, pavement covered in rain or snow may still flummox the vehicle's operating system. So, the first question was can you describe what some of the real world testing is finding? What are the problems and do they tell you and the industry about when fully autonomous vehicles will be ready to safely carry passengers without human intervention? That is the first question.

And the second one, recent controversies surrounding General Motors, Volkswagen, Takata air bags, and others show that the automotive industry doesn't have always a great track record with the consumer trust in recent years.

So, if the industry says trust us with autonomous vehicles, why should consumers take them at their word and what assurance, then, can the industry give consumers and give the regulators that their vehicles will be safe to operate?

Mr. ROSEKIND. So, to your first question, I would say prior to January that was the number one issue that everyone raised. When will they be here? And what was interesting is in January we were pointing out at both DOT and NHTSA that frankly, these technologies are already on the road. We already have adaptive cruise control, automatic emergency braking, blind spot monitoring, Lane Assist, all these things are already on the road. So, one of the challenges we have had is actually helping people to learn about the different levels of automation. And just to be very, very sort of strict about it, the highest levels of self-driving vehicles is where the passenger, driver, individual in the vehicle, perhaps no individual at all, has no responsibility for monitoring the vehicle or the

environment. Those are the highest levels, basically, of a truly self-driving vehicle.

So, to your question, I am not sure anybody knows quite yet how far off we are. In fact, I would say in the last 6 months, we are starting to see people actually acknowledging how hard this problem is to get to a full self-driving car.

On the other hand, we also have level 3 which is where the operator still has to be engaged, both in monitoring the vehicle and the environment. And there may be situations where that operator, that driver, would have to actually have the vehicle hand off to the operator in some situations that you were just mentioning, weather conditions, infrastructure that wasn't known, et cetera, the driver has to still be vigilant in monitoring what is going on. People question whether that is even possible with this new technology.

So, what you have just highlighted is when nobody knows. And the questions remain, do we still need that driver engaged? Can we go to full self-driving? Those questions remain open.

And I would just say that the Department has really left open the answer to that by letting the data tell us whether or not level 3 is possible, full self-driving level 5, how those will go forward. The data will tell us where we are.

So, I think everything you just highlighted is exactly the very challenging sort of thread the needle issues we have.

Ms. SCHAKOWSKY. So, we may have implementation of different levels, though, in a different timetable.

Mr. ROSEKIND. Correct. And that is why I say your issue about transition, so I would love to point out that if there were a perfect fully self-driving car available tomorrow, right now, the average age of vehicles is 11 and a half years, it would take 20 to 30 years for the whole fleet to take over if we had full self-driving.

So, to your point, for the next 20 or 30 years at least, we will likely have a mixed fleet of different levels of automation and different people actually out there driving.

And I think that is also extremely well placed, which is a lot of folks have talked about the big era of recalls that just happened. That is not good. We have tried to move to a proactive safety approach. I would highlight that NHTSA has not given up and will continue to pursue all of our rulemaking and enforcement authorities. Anybody who has watched us over the last few years knows we will use whatever we need to to help keep people safe on our roadways.

But one of the things I think we can highlight is a year ago in January the Secretary announced a proactive safety agreement with 18 global automakers. That wasn't just words. In fact, we have already seen best practices come from the industry, basically on cybersecurity. We saw 20 of them come together and basically make a commitment to get automatic emergency braking on the road standard in all of their vehicles by 2022, beating regulation by probably 3 to 4 years. And we just recently had a Volvo truck recall that hit 100 percent completion rate for 16,000 vehicles, which is sort of groundbreaking with the speed that was done. That was part of that agreement, 100 percent completion rate. It is only the beginning but it is not just talk. We are seeing very concrete actions.

But to your point, we have to watch to make sure that they actually meet what the requirements are.

So, I will just close. There is a 15-point safety assessment that people have to provide for us. There is a lot of discussion is it required or not. If you want everyone to trust what you are working on as a manufacturer, technology developer, we think you would want the most transparent, thorough public notice of what you are doing to address safety up front.

Ms. SCHAKOWSKY. Thank you very much.

Mr. BURGESS. The chair thanks the gentlelady. The gentlelady yields back. The chair recognizes the gentleman from Kentucky, Mr. Guthrie, 5 minutes for your questions, please.

Mr. GUTHRIE. Thank you, Mr. Chairman and thank you, Dr. Rosekind for being here today. We appreciate it a lot.

I understand the importance of self-driving cars, as we look for ways to dramatically improve traffic safety. In Kentucky, alone, we have had 761 fatalities last year. So, I know we need to better understand this issue.

But I had a chance to meet with the MTC truck driver training school in Elizabethtown. And of course, they are closely following the development of this new technology. And they brought this point up to me and I had never thought of it or considered it but I understand that there are homeland security issues, which have been raised in commercial transportation sector and it is this 15-point list on safety expectations for autonomous vehicles includes a point on digital security to prevent hacking into vehicle systems. I never would have thought of that until they brought that up.

And has NHTSA considered the broader homeland security issues surrounding digital security of autonomous vehicles?

Mr. ROSEKIND. Yes, that issue has actually come up. We had two public meetings in our open docket for months while we were creating the policy and those issues were brought up already. So, frankly, not only are we looking at them but Homeland Security has already been informed because they have a lot of the issues and questions.

Mr. GUTHRIE. That was my next question. Are you all coordinating with each other on this?

Mr. ROSEKIND. Absolutely. We have already had meetings.

Mr. GUTHRIE. OK, thank you. Well, on a related note in your testimony, you mentioned that the guidance was developed in close coordination with the American Association of Motor Vehicle Administrators, individual states, and other stakeholders. Who were those other stakeholders mentioned in your testimony?

Mr. ROSEKIND. We have a long list. I am happy to send, there was a public docket.

Mr. GUTHRIE. OK, probably easier to just submit it.

Mr. ROSEKIND. Yes. Yes, we will submit that to you.

Mr. GUTHRIE. OK, good, if you don't mind doing that.

Mr. ROSEKIND. Sure.

Mr. GUTHRIE. How do you expect entities to certify compliance with each of the 15 areas or certify that they are at least addressed, each of the 15 areas? How are you going to ensure?

Mr. ROSEKIND. Yes and thank you because you just raised a really critical issue. We identified 15 safety areas that they have to ad-

dress. That is what is included in the letter. But it is very important to realize we don't tell people how to get there. You have to address this but there is no judgment about compliance or not because we don't set a prescription there. And so our evaluation is whether they have addressed it or not, not whether there is a bar that they have passed.

Mr. GUTHRIE. OK, good. And what kinds of information do you expect to collect on each of the 15 areas? I guess my understanding from the letter is it is only expected to be two pages long. So, I think you might have answered that question. What do you expect them to do versus what you are asking them to do?

Mr. ROSEKIND. That is actually a good question. We haven't addressed that yet. I will just say that we just last week had another public meeting and one of them was specifically on the letter. Right now what we are telling people is not a page limit but this is literally a C-suite. If a CEO had to get briefed on these 15, what information would you provide that individual so they could sign off on it?

Mr. GUTHRIE. OK.

Mr. ROSEKIND. So, there has got to be enough to make a decision. If we need more information, we will ask for it.

Mr. GUTHRIE. OK, good. And does NHTSA plan to make the safety assessment letters public and do you expect the safety assessment to include confidential business information that would need to be redacted?

Mr. ROSEKIND. So, we absolutely do hope to have transparency, so it would be public. And NHTSA, for a long time, has great experience in protecting confidential business information. That is not the intent of that letter. It really is to focus on safety and letting manufacturers, developers, et cetera, let the public and us know how they are addressing it.

Mr. GUTHRIE. Well, thank you and I appreciate your thorough answers and in the submission of the other stakeholders was something we would request. You have answered my questions and I yield back my time. Thank you.

Mr. BURGESS. The chair thanks the gentleman. The gentleman yields back. The chair recognizes the gentleman from California, Mr. Cárdenas, 5 minutes for questions, please.

Mr. CÁRDENAS. Thank you. And thank you, Mr. Chairman for having this hearing. It couldn't be soon enough because this is moving very, very fast and hopefully we will have tremendous success not only to the manufacturers but to the consumers and everybody in-between.

Dr. Rosekind, my first question has to do with the timing. There is so much out there. Some people are saying we are going to see these cars on the road soon in limited or mass production, et cetera. What does soon mean from what your vantage point is? Are we looking at 2017, 2018, 2025? And if so, what is the likelihood of us seeing mass utilization on our public roads?

Mr. ROSEKIND. We are already seeing certain safety technologies on the roads today. So, adaptive cruise control, automatic emergency braking, blind spot monitoring, these technologies are already available. And so when people say when will we see them, they are already here. When we look at fully self-driving, those are

years off. And in fact I was just commenting I think just in the last 6 months or so, we are hearing from a lot of folks that they are understanding how hard a problem this problem really is. So, as much as people are giving us target dates, we will have to wait and see those coming.

The final thing I would just say is what you are also highlighting is there will probably be several decades where we will have a mixed fleet of different levels of automation and people still with their hands on the wheels that all of us will be in for at least again potentially 20 plus years.

Mr. CÁRDENAS. Well, this is a very individual matter for those who would ever think of driving a fully automated vehicle. My father 40 years later used to tease my mom how the first time he drove up in a little Model T in the 1940s, she wouldn't get in the car. This contraption; I am not going to sit in it. However, we are talking about today's contraptions. Sorry for the rudimentary description but it is my understanding that because of the interest in ensuring that components of autonomous vehicles are safe from cyber intrusion, some have expressed concern about retrofitting existing vehicles with the technology that would help prevent that. Does aftermarket autonomous technology present cybersecurity risks?

Mr. ROSEKIND. Actually, all the vehicles create cybersecurity vulnerability. So, on our list of 15 safety issues, cybersecurity is one of them and, basically, the same concerns as you apply to new would have to be to any kind of retrofit as well.

Mr. CÁRDENAS. OK. Now, when it comes to the fully autonomous vehicles because I think that is the Holy Grail of what the industry is looking at and what I think quite a few people on this plant would love to see that happen for a lot of good reasons, but what concerns me is when people try to rush things through and push an organization like yours to just get it done, it is unfortunate, because there is no shortage of people on any given day that would go ahead and jump off of a mountain with a little tiny parachute and think that is the most awesome thing in the world. However, if that parachute doesn't come out, one person gets hurt and they are in control of themselves, if they have the freedom to do so and they did so.

But the issue that we are talking about here today, if somebody actually does something that they find is not risk-taking at all, we are talking about the public roads. We are talking about if something goes wrong it is not just the person who made the decision to be in that vehicle. It is other individuals out there and that is the demand and the responsibility of your department that I respect so much.

So, with that having been said, how do you feel about the resources that you have and the ability for you to keep up with this tremendous demand that the world is saying hurry up, we need to see this happen. And with all due respect, being Americans, we always like to be the first.

Mr. ROSEKIND. Let me actually slightly expand that, which is when we did the press conference to issue the policy, the Secretary's last question is, does DOT and NHTSA have the expertise and resources to get this done? And I love this Secretary's answer

because basically we are the ones who created it. We have the expertise but you are bringing up a really, really critical element. And that is, with the explosion of innovation that we all want to see to help with safety, the agency absolutely will need to build on that expertise and expand the resources to make sure we can really timely meet the needs that are going to be out there to get safety.

There are some things we have suggested that I think have just totally surprised people about our commitment to get interpretations out in 60 days, exemptions in 6 months. You need resources to pull that off. Even the letters we are saying 4 months, that is up to 4 months. If we want those evaluations done, we are going to need to make sure that the expertise we have grows and we have enough resources to meet the demand quickly but safely.

Mr. CÁRDENAS. Because lives are on the line, right? Unfortunately, ultimately, that is what it is and we are not just talking about the person that chooses to be in such a vehicle. We are talking about people around them that gosh, I don't know what the statistic is but I would imagine the average person passes up hundreds, if not thousands of people on any journey to and from work on either side of them.

So, thank you for doing the job that you have. Hopefully, we will see Congress, who has the power of the purse, continue to give you the resources you need to keep up. Thank you.

Thank you, Mr. Chair. I yield back.

Mr. BURGESS. The chair thanks the gentleman. The gentleman yields back. The chair recognizes the gentlelady from Indiana, Mrs. Brooks, 5 minutes for questions.

Mrs. BROOKS. Thank you, Mr. Chairman.

As Congressman Lance just talked about New Jersey last year, there were 821 driving fatalities in Indiana alone, which was a 10 percent increase from the previous year. But they, obviously, we talk about these big numbers but one particularly that happened in my district, Susan Jordan, who is the principal of Amy Beverland Elementary School served in Lawrence, Indiana, was killed tragically by a school bus that rolled in front of her, as she pushed children out of the way. And so for many families who have lost loved ones, I would say the auto industry and ensuring that cars, and buses, and other vehicles are as safe as possible, we need to not stand in the way of this innovation, whether it is pedestrian detection, lane warnings, pre-collision assist that can eliminate the human error that could save lives like Principal Jordan's.

I want to ask a question, though, with respect to NHTSA's Federal Automated Vehicle Policy where you are requesting large amounts of data from the auto industry on the operation and the execution of the highly autonomous vehicle technologies that includes a lot of potentially sensitive information about businesses and consumers. But on the other hand, we recognize, and you have just talked about it in response to Congressman Guthrie's question, multiple attacks from whether it is foreign or domestic bad actors attempting to get that data.

Without going into great detail, what kind of protections does NHTSA plan to have to ensure that this sensitive information isn't getting into bad actors' hands?

Mr. ROSEKIND. First, thank you for telling Principal Jordan's story. We talk about these big numbers but everyone is a person and a face. So, thank you for doing that.

Mrs. BROOKS. You are welcome.

Mr. ROSEKIND. It just is so critical.

And you are bringing up a really interesting piece, which is, as we talked about earlier, our intent is to get literally a CEO summary of what information goes into the safety assessment and then the developer, automaker, et cetera, they keep all that other data. So, it is only if there is information that we ask for that they are going to have to give us more. And the other part is we only need to see confidential business information that helps to make their point. Everything else, they get to keep. And for decades, we have been protecting that.

So, we are looking at the safety information. We just had a meeting on the letter to try and decide how to get information and you can keep all that confidential business information away and redacted as needed, we have been doing that forever. We will continue to do that here.

Mrs. BROOKS. So, you are indicating that NHTSA is not going to be keeping the sensitive competitive information between the different automakers.

Mr. ROSEKIND. We are not actually interested in that. We just want to know here is 15 areas. Tell us how you have actually addressed it. Part of the way that we are actually supporting innovation is I hope everyone in the room would come up with a different way of handling each of those safety areas. And then we will let the data tell us which ones are actually going to be the best for the future.

Mrs. BROOKS. And with respect to the auto industry's information showing an analysis center, what role are they playing or should they play in addressing the cybersecurity issues?

Mr. ROSEKIND. Critical. I mean basically with a lot of urging from NHTSA and a lot of work on the industry's part, they have come up with this cybersecurity mechanism to really help deal with the vulnerability. They will be a core part of protecting these vehicles in the future.

Mrs. BROOKS. It is my understanding that the safety assessment letter is requiring, when any significant update to a vehicle is made, that NHTSA requires the manufacturer to submit the safety assessment letter. Can you please explain what is meant by a significant update and the impact such a process will have on testing that the developer of the autonomous vehicle is forced to submit a new letter and if it is every 4 months on any changes made during testing? Can you talk more about what the meaning of significant changes means?

Mr. ROSEKIND. This is why our interactions have been so critical because, basically, if you have a vehicle that has only been driving on the highway and now it is going to go in a city, that is significant. If you have a vehicle that yesterday hit a pothole and now hit has been programmed to miss the potholes, we don't need to know about that.

And when you submit your letter if of the 15 there are only 2 that have been affected, you only need to send us those two areas.

Mrs. BROOKS. So, are you leaving it up to the manufacturers to determine the definition of significant or are there a number of examples that they are being provided to help them determine what is significant and what is not significant?

Mr. ROSEKIND. So we will be creating a template for the letter, so people have a sense of what we are looking for.

Mrs. BROOKS. OK.

Mr. ROSEKIND. We will be having guidance on where to fit their level of technology and automation for them. We will have examples of what is significant for people as guides.

Mrs. BROOKS. And what happens if a manufacturer doesn't submit the safety assessment letter? Are there ramifications?

Mr. ROSEKIND. That is probably one of our biggest fears, frankly, which is that this is an opportunity for folks in this area, in a proactive way, at the front end to show us what you are doing about safety. We would hope, whether it was required or not, it doesn't really matter, you want to show the public and NHTSA what you are doing to address safety in these vehicles. That is an opportunity. We hope everybody is going to take it and be enthusiastic about it.

Mrs. BROOKS. But right now, NHTSA doesn't have the authority, is that right, if a manufacturer chose not to submit a letter? Is that authority you would like to have?

Mr. ROSEKIND. So, it is not required at this point. It is a policy. But to your point, one of the areas that we have actually identified as potential future regulations would be to require the letter, which is a great example of require the letter but stay nimble and flexible to what the categories are that are covered. In the future, there may only be ten areas that are needed. In the future, there could be 20.

Mrs. BROOKS. Thank you. I yield back. Thank you.

Mr. BURGESS. The chair thanks the gentlelady. The chair recognizes the gentleman from Oklahoma, Mr. Mullin, 5 minutes for questions, please.

Mr. MULLIN. Thank you, Mr. Chairman. Doctor, good to see you again. Thank you for the work you are doing here.

I want to kind of follow-up a little bit on what my colleague from Indiana was questioning about. I think clarity is, obviously, very important and we don't want to be over burdensome on new technology. We don't want to stifle the entrepreneur that is going to be out there that is going to be making the investment because this is investment. It is an investment in an unknown area knowing where the regulators are going to fall into.

But I think we all are looking for just an idea of where the floor is. So, if they are going to be investing, they can be investing in the right direction. And so I would like you to speak a little bit on that. Where do you feel like the floor is going to be so we can move forward with this technology? I will be honest with you, I am not a big fan of it. I like driving. I mean my wife drives an SUV that has got the adaptive cruise. I can't stand it. Every time I get close to a line, it vibrates on my back side because of the seat and it just scares the living daylights out of me but I get it. My wife loves it.

And so I see the need for it for those that like the idea. So, as the technology moves forward, if you could give us some direction on where you are moving so we can work with you on it.

Mr. ROSEKIND. I want to hit that point, though, I think which is——

Mr. MULLIN. The vibrating part?

Mr. ROSEKIND. The fact that we are not going to take the steering wheel out of some people's hands.

Mr. MULLIN. Right.

Mr. ROSEKIND. I am from California. It is just the top is down and you are on Highway 1 with the Pacific Ocean on the side. It is like people are going to want to do that for a long, long time. And for all of our belief in the opportunity to save lives, this is the idea. We are going to have a mixed fleet for a long time. People who want to have their hands on the wheel, it is just going to be there for a long time.

So, to your point, though, about what kind of guidance you get, the way the policy is set up is to identify specific areas within safety that have to be addressed without prescribing how. It is basically DOT and NHTSA's way to support innovation. So, we would love to see as many different approaches to how to deal with that safety as possible. Show us what data you have.

If you think about the future path, at some point, there will probably be best practices accepted by the industry. Those will be the ones that have data that have demonstrated this is the way to go. If there is future regulation, that should come from the best practices.

Mr. MULLIN. Some of the manufacturers that I have heard from, though, they are fearful of sharing the technology. This is a race to the finish line. The only problem is, we don't know where the finish line is.

Mr. ROSEKIND. And that is a great point, which is people have talked. We have suggested there about data sharing, for example. And people are very concerned because data means money. Our issue is all about the safety. So, just think about sharing that data so that one crash would be able to educate an entire fleet to improve everything literally overnight. That would be great.

We are interested in the safety, not the solution that people use that could be proprietary. That is for them to keep confidential.

Mr. MULLIN. Thank you. I yield back.

Mr. BURGESS. The gentleman yields back. The chair thanks the gentleman. The chair would remind the subcommittee that the chair allowed members to go first. So, I am going to ask my questions now at the end.

And Dr. Rosekind, again, it has been a privilege to come to the subcommittee. Every time you are here, you and I talk briefly about the safercar.gov Web site so that people can check for recalls on their vehicles. And I just think it is extremely important, as we are coming into the Thanksgiving driving season. You ought to do it. You ought to do it for your spouse's car. You ought to do it for your kids' cars. You ought to just be sure. As we have learned over the last year and a half or 2 years, the recalls can change and what was not under recall a few months ago could be under recall today. So, I do encourage people to take advantage of the fact that you

will make that information available to them. And although it is not part of our hearing today, I wonder if you could give us just a brief update of where we are with the Takata air bag situation and what you see as some of the next steps.

Mr. ROSEKIND. And I just have to say every time I have appeared before you, you make sure safercar.gov gets into the record, that there is a point on making sure people are thinking about this. And from an agency whose mission is all focused on lifesaving, we always appreciate that so much.

For Takata, we are at about 29 million vehicles, about 46 million inflators. Maybe 20 percent have been repaired at this point. We are imminent for basically a new coordinated remedy that will have sort of the years of when supplies and fixes need to come. So, that will be out literally within weeks we hope of what sort of the next phase will be.

I will say, tragically, 9 of the 11 lives that have been lost had to do with alpha inflators, ones that were actually from 2001-2003 recalled 2008-2011. About 300,000 of those still exist out there. They have a 50 percent of rupturing in a crash. We are really working with Honda and Acura, in particular, to try and get those off the road.

Mr. BURGESS. So that you are——

Mr. ROSEKIND. The 2001 to 2003 vehicles, and these were actually recalled in 2008-2011. So what happened was, because of the most recent activity going on, testing that was never done back then was recently done and that is how we discovered these alpha inflators have a 50 percent chance of rupturing.

The Secretary came out and basically said don't drive it unless you are going to a dealer to get it fixed. And so we are working with Honda to basically figure out every possible thing that could be done to find those people. Nine out of the eleven lives lost were those alpha inflators.

Mr. BURGESS. Well, I am encouraged that you say that the solution or a solution is now within reach and I am grateful for that.

Let me just ask you, and several people have asked you about the letters, the safety assessment letter on self-driving vehicles. And I appreciate why that information is necessary and, unlike you, I think more data is good. At the same time, from the manufacturers' perspective, I can see that perhaps there might be some liability concerns about putting too much information out there. And then, of course, the tendency is to hold back because you don't want to incur that liability. Have you worked through that issue at all?

Mr. ROSEKIND. We are working through it. And what we are doing, literally just last week, we had a meeting specifically, a public meeting with an open docket for people to tell us how they think that letter should be structured and what content there should be. We will create a template so people have a guide. And we are trying to be explicit that it is not the confidential business information that we are after. It is tell us how you have addressed these particular safety issues.

And the agency has been dealing with confidential business information for decades. And so we already have experience working with the manufacturers to know how to protect them. So, we do

need to work that out but we are pretty confident that is an area, knowing it is an issue, we can figure it out.

Mr. BURGESS. One of the things I really dislike about driving is to have to get a vehicle inspection every year but I do it because it is the law in Texas. You are talking about systems that are going into cars that likely are going to require some maintenance, some calibration, some checking from time to time. Do you see this as being included as part of a standard vehicle safety inspection?

Mr. ROSEKIND. That is a great question. And part of that is because one of the clear things out of Takata was time, that those inflators basically had a service life. And so that question is now being asked of the future. These sensors, radars, cameras, LIDARs, et cetera, clearly have a service life. How they will be maintained is an open question that needs to be addressed in this coming period.

Mr. BURGESS. Every time I back out of my driveway and the little backup camera comes on and I, of course, think of Ms. Schakowsky because she is associated with that. But I have also learned, since having one of those backup cameras on my car, that every now and then I have got to get out and squeegee the little sensor or the little lens because it can get so occluded that I couldn't see anything. If the neighbors' cat was walking back there, it would be lights out.

So, I understand that there is a modicum of maintenance that the operator must provide. The vehicle can't do everything for you all the time.

Again, it has been a pleasure to have you in the subcommittee. Oh, I beg your pardon. Mr. Kinzinger has showed up. So, let me yield 5 minutes to Mr. Kinzinger for questions.

Mr. KINZINGER. Thank you, Mr. Chairman. Just when you thought you were going to go home.

Thank you for holding the hearing today on autonomous vehicles. Next week is Thanksgiving or it is coming soon, I guess. Yes, next week. And as a country, we will put millions of miles on our vehicles. It reminds us that we need to do better as a nation to drive safer and reduce vehicle fatalities. As so many of our colleagues have pointed out, vehicle accidents are claiming too many lives and, as of late, that rate is growing in the wrong direction.

In Illinois, 998 lives were lost last year in vehicle accidents. Tragically, it is an increase of eight percent from the year before.

Like many in this room, I see great promise in how connected vehicles, assisted driving technology, and autonomous vehicle technology can play in reducing the number of vehicle deaths. I applaud NHTSA for laying out a framework that will allow automakers, software developers, and other stakeholders to blaze a path forward in transforming vehicles and making the roads in the future safer. I hope today's hearing is a starting point for our committee, as we consider the wide-ranging policy issues that autonomous vehicle technology touches.

But Dr. Rosekind, again, thank you for your service. Thank you for everything you have been doing. I would like to ask you about the Federal Automated Vehicles Policy released in September, as a few people have mentioned.

It mentions the possibility of convening the Commission to study liability and insurance issues and it also clearly states that insurance and liability apportionment are state responsibilities, as they are now and makes no argument for that change.

What role do you see auto insurance playing in the future?

Mr. ROSEKIND. That is to be determined. Great piece to bring out, which is there are a lot of unknowns here that need to become known. That was an example of since we don't know that but we know the question, let's have the states get their group together to figure out how this is going to go for the future. Big questions there.

Mr. KINZINGER. OK. And the AV guidance does a really good job defining the roles of the federal regulators in the states. NHTSA is responsible for overseeing the design and performance of motor vehicles, while states regulate things like driver licensing, insurance liability, et cetera. The goal is for manufacturers to be able to sell, obviously, across all 50 states. In fact, guidance says that states should not codify them.

But would you agree that if a state were to require compliance with the guidance before an AV could be sold in the state, that would be the same thing as codifying the guidance and why or why not?

Mr. ROSEKIND. So, the good news now is everybody is very interested in seeing a unified, consistent framework. And so to your question, what we are already seeing states basically challenge with is what language they use to describe exactly what you are talking about. So, if somebody says certify the letters there, they are worried there is a whole other evaluation going on when in fact the state may just say make sure we get a copy of the letter. But those were exactly the things we have to make sure there is consistency for everyone so that patchwork doesn't get created.

Mr. KINZINGER. OK. And are you all monitoring what legislative proposals are coming out from the state, since the agency issued its guidance? And is NHTSA continuing to work with states on regulatory policy addressing self-driving vehicles?

Mr. ROSEKIND. We are not only monitoring but we actually made an effort before the policy was released to put in a chart with all of that but it is moving too fast. So, we are going to continue monitoring.

And we have just had two meetings, one about the policy, one about the template letter, and the third one is going to be with the states to talk about the state policies and other actions they might take. We are hoping that will come up this month or right after the new year.

Mr. KINZINGER. Great. And the policy asks automakers and other entities to voluntarily submit a letter referred to as a safety assessment letter that outlines how the entity has addressed 15 areas prior to the testing and deployment of autonomous vehicles. Can you explain what NHTSA will be doing with the safety assessment after it is received?

Mr. ROSEKIND. So, that letter is intended to basically have whoever the manufacturer, developer, tech company, et cetera, communicate to NHTSA and the public how they have addressed those 15 safety areas. And we are trying to make it very clear we are not

passing judgment. We are just ensuring that they have addressed all of those different areas. We are going to have a template for what that letter should look like. We are going to have a template for what our response could look like. And frankly, right now, the first response you might get would just be thank you or it could be send us more information about X.

Mr. KINZINGER. OK. So, you kind of have a plan in place to determine if it is adequate or whatever. And then as or will NHTSA hire subject matter experts like software engineers to analyze and understand software updates submitted for review?

Mr. ROSEKIND. So, when Secretary Foxx answered the last question when this policy was issued, that question was so does NHTSA have the right expertise. He pointed out that it was NHTSA that created this policy.

We have got the expertise. We will be looking to expand that and resources because if this area grows the way we think it could, there are going to need to be more people with that expertise into the future.

Mr. KINZINGER. OK. Well, I just want to say again, thank you and thanks for answering my questions quickly and efficiently.

Mr. Chairman, I will yield back the balance of my time.

Mr. BURGESS. The chair thanks the gentleman. The gentleman yields back. The chair recognizes the gentleman from Florida, Mr. Bilirakis, 5 minutes for questions, please.

Mr. BILIRAKIS. Thank you so much. I appreciate it. Thank you, Mr. Chairman. I thank the panel for their testimony.

I understand that NHTSA is thinking about future regulations requiring manufacturers to submit a safety assessment letter. Do you think that the safety assessment letter, if required, would preempt state laws and regulations regarding design and performance of autonomous vehicles?

Mr. ROSEKIND. It is really two different elements we are getting to there. One is the 15-item safety assessment is basically to let NHTSA and the public know that these 15 areas of safety have been addressed. It is, as a policy, not required. And what we have identified, if there were regulation, there might be a requirement to submit that letter but we would keep it nimble and flexible. That 15 could become 12 or 20, based on future innovations, basically.

And really at this point, part of what we tried to do with the states to avoid the patchwork was clarify here is what the federal agencies will take care of; here is what the states should take care of. We have those vehicle standards to take care of. They should be handled by this letter.

Mr. BILIRAKIS. Thank you. In your view, would inconsistent state laws and regulations, I know you addressed this somewhat. Would inconsistent state laws and regulations related to the design and performance of autonomous vehicles hinder innovation in this lifesaving technology? How do we ensure that state laws and regulations on self-driving cars are uniform and consistent? And is there a role for Congress to play?

Mr. ROSEKIND. So, you have just identified, and it has been raised previously, that is a vulnerability that remains. If there is a patchwork, that could really hinder not just innovation but the

opportunity to save these lives. And so right now, the policy outlined some very specific ways for states, if they choose to get involved, here are some errors they could start with. This is an area I think we all have to stay tuned as meetings and discussions go on to see whether or not everyone is going to actually deliver on that unified consistent framework.

Mr. KINZINGER. Thank you. Next question. With regards to the safety assessment letter, does NHTSA anticipate suppliers would have to apply for exemptions to test vehicles with level two to five systems or would be the safety assessment letter be limited to manufacturers?

Mr. ROSEKIND. If you look, the policy actually is really explicit. Anybody who is in this arena should be submitting a letter, potential, so that is manufacturers, suppliers, tech companies, et cetera. One of the questions we have been getting, though, is if you have a collaboration, say between the manufacturer, a ride-sharing, and a technology company, who submits the letter. And that is something where we will work with them to basically decide whether we get one letter or at least one integrated one that has all three of those represented.

Mr. KINZINGER. Thank you. Have you worked with the Federal Motor Carrier Safety Administration in the development of these guidelines and have you been working with the trucking industry in developing self-driving policies?

Mr. ROSEKIND. So we were, as part of the Department of Transportation, we are in touch with all of the department, but in particular the Federal Motor Carrier Safety Administration about this as well.

We had two public meetings and an open docket. So, I can tell you the trucking industry, we had a least dozen interactions with them. And in fact, to the public docket, their trade association submitted comments. So, there has been a lot of interaction with them already and there will continue to be.

Mr. KINZINGER. Very good. Thank you. I yield back, Mr. Chairman. I appreciate it.

Mr. BURGESS. The gentleman yields back. The chair thanks the gentleman.

There being no other members wishing to ask questions, I do want to thank our witness for being here today. This will conclude our first panel. Again, Dr. Rosekind, thank you for your service. We will take a brief, two-minute recess to set up for the second panel.

[Recess.]

Mr. BURGESS. Welcome back. Thank you all for your patience and I thank our panel for taking the time to be here today. We will move into the second panel for today's hearing. We will follow the same format as the first panel. Each witness has 5 minutes for an opening statement, followed by questions from members.

For our second panel, we have the following witnesses: Mr. Mitch Bainwol, President and CEO for the Alliance of Automobile Manufacturers; Mr. Kirk Steudle, Director at Michigan Department of Transportation; Ms. Laura MacCleery, Vice President of Consumer Policy and Mobilization at Consumer Reports; Ms. Ann Wilson, Senior Vice President at the Motor and Equipment Manufacturers

Association; and Mr. Gary Shapiro, President and CEO at the Consumer Technology Association.

We do appreciate you all being here today. Mr. Bainwol, why don't we begin with you? You are recognized for 5 minutes for an opening statement, please.

STATEMENTS OF MITCH BAINWOL, PRESIDENT AND CEO, ALLIANCE OF AUTOMOBILE MANUFACTURERS; KIRK STEUDLE, DIRECTOR, MICHIGAN DEPARTMENT OF TRANSPORTATION; LAURA MACCLEERY, VICE PRESIDENT OF CONSUMER POLICY AND MOBILIZATION, CONSUMER REPORTS; ANN WILSON, SENIOR VICE PRESIDENT, MOTOR AND EQUIPMENT MANUFACTURERS ASSOCIATION; AND GARY SHAPIRO, PRESIDENT AND CEO, CONSUMER TECHNOLOGY ASSOCIATION

STATEMENT OF MITCH BAINWOL

Mr. BAINWOL. Thank you, Chairman Burgess, Ranking Member Schakowsky, and members of the subcommittee, thanks for having me back to testify today on behalf of 12 iconic automakers, who are engaged in a massive exercise in self-disruption.

I spent 8 years in the music industry as a digitization of the music wrecked business model and devastated property rights. There was little that industry could do. Autos are in a very different spot, we are manufacturers and technology companies and mobility providers and we are innovating rapidly.

Three converging trends are driving dynamic change. The first trend is the rapid emergence of crash avoidance technologies that will culminate in self-driving cars.

The second trend is the evolution of ride and car-sharing starting with Uber, Lyft, Car2Go, and others, but swiftly moving to a wide range of other models. Sharing will reduce ownership rates to some degree but also shorten fleet age.

And the third trend is the gradual evolution in power trains toward electrification that, in the present low gas cost context, is being driven more by policy mandates than by consumer demand.

Combined, these trends are changing mobility profoundly and as mobility changes, the overriding goal of my members share is to ensure that consumers are able to afford these vehicles that offer a higher efficiency and enhanced safety features. The faster we can safely and affordably move to the future, the better.

While the introduction of self-driving cars is just around the corner, the transition of full autonomy will take two generations. Moody's predicts these cars will not be a majority of the fleet until 2045 or ubiquitous until 2055.

But the important fact is that benefits already are materializing. First, safety: 99 percent of road fatalities are the result of behavioral issues, environmental circumstances, and infrastructure limitations, rather than car defects. Technology addresses many of these challenges by helping to avoid crashes altogether. Elon Musk says that moving too slowly will kill people. I might say it less provocatively and Tesla is not a member but he has a point. We need to lean forward.

Second, technology can reduce carbon and strengthen the environment both by mitigating congestion and by facilitating more efficient use of the automobile.

Third, technology can enhance access for the young, the old, the disabled, and the economically disadvantaged.

Fourth, individuals and businesses will benefit from time savings and meaningful productivity gains, helping society and the economy.

Fifth, the combination of lower per mile cost and higher cost utilization rates resulting from ride-sharing has the potential to reshape mass transit. For all of these reasons, most stakeholders believe accelerated deployment is highly desirable subject to ensuring a material net safety gain. But we also know that the traditional regulatory mechanisms can't handle the space of innovation.

Administrator Rosekind and Secretary Foxx put their fingers on this problem and deserve considerable credit for seeking a new approach, facilitating the proper mix of oversight and regulatory flexibility. It is not an easy puzzle and we understand that committee members will have different visions about what it means to be nimble and flexible while also offering predictability and stable roles.

We are carefully examining NHTSA's guidance and will formally respond a week from today at the deadline. That response will be shared with that committee. And we fully expect the Trump administration to put a stamp on this policy. Congress ought to as well.

The feds have traditionally regulated the car, the states, the driver. With autonomy, the car is the driver and that, in essence, creates static between the Federal and state obligations.

Perhaps the key objective behind NHTSA's recommendation was to provide federal leadership to avoid a patchwork of state rules. Yet, the early evidence is it still might be necessary to further strengthen the federal leadership. Some even have suggested that a state-level time out might be warranted.

A second key objective was to reduce federal regulatory rigidity and ambiguity. Some of the rigidity has been addressed with commitments to timely respond to requests for interpretations and exemptions but too much ambiguity remains. Policy often seems simple but when it gets to execution and compliance, that simplicity morphs into numbing complexity and complexity equals delay, higher costs and delayed social benefits.

Finally, another key objective was to provide mechanisms to better share data and learning to class both OEMs and tech providers. It is a prudent goal. We are not certain, however, that all contemplated obligations are feasible and productive.

Summing up, we appreciate this committee's initiative to help accelerate the smart introduction of these lifesaving carbon-reducing, economy-enhancing technologies. This is guidance, voluntary for now at the federal level and mandatory, effectively at the state level triggers this conversation. We welcome it because the stakes are high and the opportunity is enormous. Government must pave the way for technology deployment and must not, despite good intent, become an obstacle to realize in the brighter future of mobility.

I look forward to answering your questions.

[The prepared statement of Mr. Bainwol follows:]

STATEMENT

OF

THE ALLIANCE OF AUTOMOBILE MANUFACTURERS

BEFORE THE:

HOUSE COMMITTEE ON ENERGY & COMMERCE

NOVEMBER 15, 2016

PRESENTED BY:

Mitch Bainwol
President and CEO

SUMMARY OF ALLIANCE OF AUTOMOBILE MANUFACTURERS TESTIMONY

Personal transportation is poised to undergo revolutionary change. Three converging trends are driving this dynamic change and will continue to do so.

- The first is the rapid emergence of crash avoidance and driver assistance technologies that serve as the building blocks for automation and will ultimately culminate in full driving automation.

- The second is the evolution of ride-hailing and car-sharing, starting with Uber, Lyft, Car2Go and others but swiftly moving to a wide range of other providers and models.

- The third is the evolution in power trains – with the primary driver of this transformation being the fuel economy and greenhouse gas standards. This should be driven by actual consumer demand, not pushed by aspirational policy requirements.

Most analysts and stakeholders embrace the idea that automated vehicle technology has tremendous value for safety and that accelerated deployment is highly desirable. But we also know that the traditional regulatory mechanisms cannot handle the pace of innovation that is occurring in our industry today.

Secretary Foxx and Administrator Rosekind put their finger on this very problem and deserve credit for advancing the Federal AV Policy Guidance that aims to facilitate the delicate policy mix of oversight and regulatory flexibility.

We are examining the NHTSA AV Policy Guidance that was released on September 20th and will formally respond by the comment deadline. Our overall impression is that the Guidance is a good first step. Our formal comments to the agency will include suggestions for improvement and requests for clarity. We have some suggestions, which we feel are necessary to ensure that automakers are able to proceed with AV development, testing and deployment without undue delay.

- The AV Policy Guidance seeks to outline and clarify federal leadership so that AV innovations are not compromised, sent abroad, or otherwise delayed by a patchwork of conflicting or duplicative state rules. Unfortunately, the early indication is that this goal may not have been achieved. States are continuing to act or express interest in the regulation of automated vehicles.

- We believe that NHTSA struck the correct balance with respect to the proper federal and state roles that were outlined in the AV Policy Guidance. Simply put, the federal government (NHTSA) regulates the car, and the states regulate the driver via licensure, traffic enforcement and insurance.

- However, the Guidance remains far too ambiguous overall; in particular, there is a lack of clarity on the expectations of the 15-point Safety Assessment letters that automakers and others are asked to voluntarily submit to NHSTA before proceeding with testing and deployment of AV technologies.

- A final area of concern is how NHTSA envisions expanded collection and sharing of data and best practices among competitors who are developing AV technologies. While learning from data is an understandable objective, at this point in time, complying with such obligations is not technologically feasible. Concerns around intellectual property, competitive business information, and antitrust must also be addressed.

Chairman Burgess and Ranking Member Schakowsky, thank you for inviting me back today to testify about enhanced automotive safety and in particular Automated Vehicles on behalf of 12 leading automakers[1] who are engaged in an effort to transform mobility.

For more than a century, innovation in automotive mobility has been our guidepost, producing technological advances leading to safer, cleaner, more energy-efficient cars and light trucks.

Now, looking down the road, personal transportation is poised to undergo revolutionary change, as dramatic as the introduction of the first cars on our roads. Those first vehicles changed society by connecting people to markets, to health care, and to schools.

Before us lies the potential to dramatically reshape the driving experience and redesign the whole concept of personal mobility.

The vision for the future of cars and mobility is transformative. What once seemed fanciful is now closer and closer to reality. Soon, it is expected that cars will be "talking" to one another and the infrastructure around them, and highly automated vehicles will provide improved travel for the young, aged and disabled and more efficient transport of goods to market. These new technologies have the potential to improve our quality of life and our economy in numerous ways by enhancing safety and reducing both congestion and environmental impacts.

[1] Alliance members include BMW Group, FCA US LLC, Ford Motor Company, General Motors, Jaguar Land Rover, Mazda, Mercedes-Benz, Mitsubishi Motors, Porsche, Toyota, Volkswagen Group of America and Volvo Cars. Alliance members account for roughly three quarters of all vehicles sold in the U.S. each year.

As the most recent NHTSA data shows, these technological developments are needed sooner rather than later. According to NHTSA, in 2015 there was a seven percent increase in fatalities on the roadways. [2] Unfortunately, NHTSA's projections for the first six months of 2016 look worse than 2015, with a 10.4 percent increase in traffic fatalities just from January to June of this year.[3] If these numbers hold, we are looking at the first back-to-back years of traffic fatality increases in 15 years.

Therefore, the advanced driver assist and automated technologies being developed by the auto industry are critical. Rising to the challenge in a changing market, our companies continue to evolve and advance not only safety but also personal transportation options to a wider swath of your constituents. Our members are rapidly becoming mobility companies as much as they are traditional car companies.

Three converging trends are driving this dynamic change and will continue to do so.

- The first is the rapid emergence of crash avoidance and driver assistance technologies that serve as the building blocks for automation and will ultimately culminate in full driving automation. Examples include automatic emergency braking, lane keeping assistance and blind spot detection technologies that are found on a growing number of automobiles on the road today.

- The second is the evolution of ride-hailing and car-sharing, starting with Uber, Lyft, Car2Go and others but swiftly moving to a wide range of other providers and models.

- The third trend is slower but important; the evolution in power trains that today is being driven more by aspirational policy requirements than actual consumer demand. In a world with low gas prices, the

[2] NHTSA Traffic Safety Facts, DOT HS 812 318, August 2016, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812318
[3] NHTSA Traffic Safety Facts, DOT HS 812 332, October 2016, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812332

economic benefits of electrification are not profound enough to make up for current range and utility limitations.

On balance, these three trends are creating a wave of change in mobility for the better, and that will extend long into the future.

In fact, it's arguable that the faster we can safely and affordably get to the future, the better. But while the journey has begun, we should all understand that the transition to full driving automation will take a couple of generations. There are roughly 263 million automobiles registered in the United States with an average age of 11.5 years, Moody's predicts that automated vehicles will be a majority of the fleet by 2045 and ubiquitous by 2055.[4]

However long this transition takes, the benefits are profound and already materializing. For instance, it is well-established that nearly all roadway fatalities are not related to the proper functioning of the vehicle. Because of the innovations that automakers are introducing, technologies are increasingly able to help address the 99 percent of roadway fatalities that are mostly a product of human behavioral issues – such as speeding, alcohol impairment, failure to use a seat belt, and distraction – as well as environmental factors and infrastructure limitations.

And if you aren't swayed by the life-saving potential of these technologies, consider the additional compelling benefits:

First, these technologies may help reduce carbon emissions, both by mitigating congestion and by facilitating the more efficient use of the automobile.

Second, access for the young, the old, the disabled and potentially the economically disadvantaged will be significantly enhanced.

[4] http://www.reuters.com/article/us-moody-s-autos-selfdriving-idUSKCN0WV22O

Third, individuals, families and businesses will benefit from time savings – and meaningful productivity gains, thus helping society and the economy.

Fourth, the combination of driving down per-mile costs and driving up car utilization rates via ride sharing has the potential to dramatically re-shape public policy choices about mass transit and urban planning.

The future of mobility is indeed bright, and working together industry and government can promote sound public policies that support automation, connectivity and the replacement of older vehicles that aren't as efficient or equipped with advanced safety and driver assistance features. Getting to "ubiquity" will require many pieces of a large puzzle to fit together, including: technological advancements, consumer acceptance, achieving critical mass to enable the "network effect," and establishment of the necessary legal and regulatory framework.

Together, we can get there from here.

Most analysts and stakeholders embrace the idea that automated vehicle technology has tremendous value for safety and that accelerated deployment is highly desirable.

But, we also know that the traditional regulatory mechanisms cannot handle or keep up with the pace of innovation that is occurring in our industry today.

Secretary Foxx and Administrator Rosekind put their finger on this very problem and deserve credit for advancing the Federal AV Policy Guidance that aims to facilitate the delicate policy mix of oversight and regulatory flexibility.

We are examining the NHTSA AV Policy Guidance that was released on September 20th and will formally respond by the November 22nd comment deadline. Our overall impression is that the AV Guidance is a good first step. Our formal comments to the agency will include suggestions for improvement and requests

for clarity. I would like to highlight some of those suggestions, which we feel are necessary to ensure that automakers are able to proceed with AV development, testing and deployment without undue delay.

One of the key objectives behind NHTSA's AV Policy Guidance and the Enforcement Guidance Bulletin was to reiterate to the public and the states that NHTSA possesses broad authority when it comes to motor vehicle safety. The AV Policy Guidance seeks to outline and clarify federal leadership so that AV innovations are not compromised, sent abroad, or otherwise delayed by a patchwork of conflicting or duplicative state rules. Unfortunately, the early indication is that this goal may not have been achieved. States are continuing to act or express interest in the regulation of automated vehicles. Some have suggested that a limited "time-out" at the state level may be warranted in order to allow the Federal AV Policy Guidance to continue and be refined through periodic review. That of course would require Congress to step in and augment NHTSA's AV Policy Guidance to ensure a consistent, nationwide approach that allows AVs to be tested and deployed without unnecessary restrictions or delay at the state level.

We believe that NHTSA struck the correct balance with respect to the proper federal and state roles that were outlined in the AV Policy Guidance. Simply put, the federal government (NHTSA) regulates the car, and the states regulate the driver via licensure, traffic enforcement and insurance. The distinction is not as clear with these new technologies: with automated driving, when automated systems are engaged, the car may be considered the driver. And that creates friction between traditional federal and state responsibilities.

Another key objective of the AV Policy Guidance was to reduce – at the federal level - regulatory rigidity and ambiguity. Some of the rigidity has been addressed through the agency's pledge to provide more timely responses to requests for interpretations and exemptions. However, the Guidance remains far too ambiguous overall; in particular, there is a lack of clarity on the expectations of the 15-point Safety Assessment letters that automakers and others are asked to voluntarily submit to NHSTA before proceeding with testing and deployment of AV technologies – including testing currently underway.

Earlier today, we heard Administrator Rosekind reiterate his pledge to continue to seek input from stakeholders and revise the AV Policy Guidance based on that feedback. We appreciate that commitment and look forward to the agency's revisions to memorialize in writing the clarifications on intent that NHTSA officials have publicly stated.

A final area of concern is how NHTSA envisions expanded collection and sharing of data and best practices among competitors who are developing AV technologies. While learning from data is an understandable objective, at this point in time, complying with such obligations is not technologically feasible. Concerns around intellectual property, competitive business information, and antitrust must also be addressed. We note that the corresponding collection burdens that our members would be required to comply with under the Paperwork Reduction Act remain unclear and will require additional specificity by NHTSA. The Alliance plans to more fully articulate these questions and concerns as part of our formal comments that will be submitted next week as part of the comment process.

In conclusion, we appreciate NHTSA and this Committee's commitment to tackle the fundamental question about how best to structure policies that maximize the smart introduction of these life-saving, carbon-reducing, economy-enhancing technologies. There is a consensus among most stakeholders that NHTSA's AV Guidance, while a positive first step, must further evolve to achieve its goals.

Without question, the stakes are high and the opportunity before us is enormous. Government must pave the way for deployment of these technologies and must not, even if well intentioned, become an obstacle to realizing a brighter and safer mobility future.

Thank you for the opportunity to be here today. I am happy to answer any questions.

Mr. BURGESS. The chair thanks the gentleman. Mr. Steudle is recognized for 5 minutes, please, for an opening statement.

STATEMENT OF KIRK STEUDLE

Mr. STEUDLE. Thank you, Mr. Chairman and members of the committee. It is an opportunity to sit in front of you. I appreciate that opportunity to talk about something that is truly revolutionary in the transportation industry, that is, connected and autonomous and automated vehicles.

At the Michigan Department of Transportation, safety is paramount. It defines everything the department does, from road and bridge design, to managing worksites, to overseeing the work of contractors. Some 35,000 people have died on America's roads, as many of you have noted. In Michigan, that number was 963 last year. Today, it is 921. That is highest in the last couple of years. That is the equivalent of 350 airline crashes with 100 passengers. Imagine what the outcry would be if that was happening.

As has been said, 90 percent of the traffic deaths could be reduced with this technology and I think for that alone is the reason we should be pursuing this at a very advanced pace.

The exponential advent of technology shows no sign of slowing down. The technology both enables and demands multitasking. Despite the ever-evolving laws and prolific safety messages, distracted driving continues to cause more crashes and more injuries and deaths as a result of those crashes. Automakers have made tremendous strides in building safer vehicles, seatbelts, air bags, antilock brakes, lane control systems, adaptive cruise control, advanced braking systems, and the like.

But even while the technology and research continues to save lives, the discovery of new distractions offset the gain. Today, more than 68 percent of U.S. adults have a smart phone. That is up from 35 percent just 5 years ago and the use of electronic devices is just one of the categories in a growing list of driver distractions.

But I am not here to preach about driving distractions. If we refuse to accept the increasing number of our friends and loved ones that needlessly die in automobile accidents, we need to look for a solution and the solution is automated vehicles, a vehicle that removes the driver and the driver error.

While safety is the overriding imperative, there are other vital benefits to automated or driverless cars. Chief among them are the extension of the freedom that comes with personal mobility and personal mobility in our golden years. If any of you have had the misopportune or the unfortunate opportunity of being in a position to take the keys away from your parent or an elderly resident, you know how painful that can be. My state has one of the oldest populations in the country. According to the 2010 census, 14 percent of the residents were over the age of 65. Driverless cars offer us the opportunity to grant all this precious autonomy to our full range of residents, not just those between the ages of 16 and 80 or 85 or 90.

They also have the ability to fundamentally change the way that people and goods move. Ride sharing is already having an impact on urban life, as more people choose that option, freeing up their time and their disposable income. This presents many questions

about the future land use, parking, consumption of fossil fuels, the evolution of public transit and many others.

I should emphasize some key things going on back in the state of Michigan. With overwhelming bipartisan support, the legislature last week adopted and sent to Governor Snyder a package of bills that will keep Michigan at the forefront of these developments. Chiefly, the bills do these things: they allow for complete autonomous operations on any road at any time, without a special license; they allow for truck platooning; they allow for on-demand automated networks, which are driverless Ubers, driverless Lyfts; and it creates a council on future mobility made up of industry participants from a broad range.

As for NHTSA, I think the agency has done a good job of identifying and distinguishing between the state and the Federal regulatory roles related to automated vehicles. States would regulate the driver or the operator. Those regulators currently vary by state, much like graduated drivers' licenses and the effects of penalties for impaired drivers. The Federal government has a long history of vehicle regulations for the OEMs, the original equipment manufacturers, and that should continue. But Michigan strongly disagrees with the proposed third-party certification process that would create a middle man, which would slow progress and the adoption of lifesaving innovations. It also would introduce a third party into the liability equations.

This technology is best tested and validated by those that have developed it and understand the technology. They should be responsible for what they include in the vehicles and not get rid of that responsibility by hiding behind a third-party tester.

Thank you for the opportunity to testify on this important topic. I applaud you for taking up this and I look forward to your questions.

[The prepared statement of Mr. Steudle follows:]

Kirk T. Steudle, PE
Director, Michigan Department of Transportation
Hearing of the U.S. House Energy & Commerce Committee
Subcommittee on Commerce, Manufacturing and Trade
Tuesday, November 15, 2016

Thank you Chairman Upton, Ranking Member Pallone, Chairman Burgess and Ranking Member Schakowsky. I appreciate the opportunity to sit before this committee today to discuss with this esteemed panel a truly revolutionary technology: connected and autonomous vehicles.

When it comes to connected and autonomous vehicles, you could say I was an early adopter. My interest in this technology dates back more than a decade and while there are many benefits, none matter more than the potential to save lives.

At the Michigan Department of Transportation, safety is paramount. It defines everything the department does from road and bridge design to managing work sites to overseeing the work of contractors. That is why MDOT has embraced an ambitious Toward Zero Deaths goal.

Some 35,000 people died on our nation's roads last year, yet the reporting seems to fade into the background.

That is the equivalent of 350 plane crashes with 100 passengers each. Such catastrophes would each generate wall-to-wall media coverage. Yet, we seem to accept the automobile crash deaths that happen a few at a time.

As reported in a recent story in *The Atlantic Monthly,* published in September 2015, researchers estimate driverless cars could, by mid-century, reduce traffic deaths by as much as 90 percent. In the U.S. alone, that would mean saving 300,000 lives over a decade.

Let's face it. The exponential advent of technology shows no signs of slowing. That technology both enables and demands multi-tasking. Multi-tasking might be fine in some instances but not when it comes to driving. Despite ever-evolving laws and prolific safety messages, distracted driving continues to cause more crashes and more injuries and deaths as a result of those crashes. Automakers have made tremendous strides in building safer vehicles -- seat belts, air bags, anti-lock brakes, and more recently, lane control, adaptive cruise control, forward and rear assist and more.

But even while the technology and research continues to save lives, discovery of new distractions offset the gains. Today, more than 68 percent of U.S. adults have a smart phone. That is up from 35 percent just five years ago, according to the Pew Research Center. And the use of electronic devices is just one category in a growing list of driver distractions.

But I am not here to preach about the dangers of distracted driving. There are many well-researched, poignant and compelling public education campaigns tackling that subject. But laws and safety messages can only effect so much change in behavior. If we refuse to accept

increasing numbers of our friends and loved ones dying needlessly while exercising the basic human function of mobility, the solution should be to eliminate the conflict.

We are going to demand more and better personal mobility options even while we seek ways to maximize our time and complete many tasks at once. If you accept those basic truths, then you know the answer has to be autonomous vehicles.

While safety is the over-riding imperative, there are other vital benefits to autonomous or driverless cars. Chief among these are the extension of the freedom that comes with personal mobility in our golden years. If any of you have been in the position of taking a parent or other elderly relative's keys, you know how painful that can be.

My state has one of the oldest populations in the country, with 14 percent of residents being 65 or older in the 2010 census. I am thrilled at the prospect of automakers in Michigan leading in developing technology that will give those people mobility options.

Driverless cars, which evolve in many forms, offer the opportunity to grant us all precious autonomy. Soon, we will no longer define driving as something limited to those of us between the ages of 16 and 85 or 90 who are physically able to drive.

Just think of the quality of life benefits.

Autonomous vehicles will fundamentally change the way we move people and goods. Ride-sharing is already having an impact on urban living, as more people choose that option, freeing up their time and disposable income.

This presents many questions about future land use, parking, consumption of fossil fuels, the evolution of public transit and others.

I should also emphasize some key things going on back in Michigan. With overwhelming bipartisan support, the Legislature last week adopted and sent to Gov. Snyder a package of bills that will keep Michigan at the forefront of these developments. Chiefly, the bills:

- allow complete AV operations on any road, any time, with no special license;
- allow for truck platooning;
- allow on-demand automatic networks; and
- create a council on future mobility

As for NHTSA, I think the agency has done a good job of identifying and distinguishing between the state and federal regulatory roles related to autonomous vehicles. States would regulate the operator or driver. Those regulations currently vary by state, just like graduated licenses requirements and the effects of penalties for impaired drivers.

The federal government has a long history of vehicle regulations for original equipment manufacturers and should continue. But Michigan strongly disagrees with the third-party certification process. That would create a middle man which will slow progress and the adoption of life-saving innovations. It will also introduce a third party into the liability equations.

This technology is best tested and validated by those that developed and understand the technology. They should be responsible for what is included in the vehicle and not abdicate responsibility by hiding behind a third-party tester.

For an example, look no farther than the current airbag recall. Imagine the finger pointing if a third party was in the middle of this discussion.

Thank you for the opportunity to testify on this important topic. I applaud the Committee for its continued exploration of autonomous vehicles, mobility, and the opportunities this game changing technology will present.

Mr. BURGESS. The chair thanks the gentleman. Ms. MacCleery, you are recognized for 5 minutes for an opening statement, please.

STATEMENT OF LAURA MACCLEERY

Ms. MACCLEERY. Thank you. Good morning, Chairman Burgess, Ranking Member Schakowsky, and members of the subcommittee.

My name is Laura MacCleery and I work for Consumer Reports, an independent nonprofit that works side-by-side with consumers to create a fairer, safer, and healthier world.

I want to start by thanking Ranking Member Schakowsky in honoring the late Clarence Ditlow. As both a former board member of Consumer Reports and leader of the Center for Auto Safety, my friend and colleague, Clarence, made immeasurable contributions to vehicle safety and was responsible for countless lifesaving recalls. His dogged persistence was legendary. His accomplishments spanned decades.

At Consumer Reports, we consider it a privilege to carry forward his and our shared dedication to safer cars.

As we have heard, traffic deaths on U.S. roads are increasing, reversing a long-standing decline. We urgently must find ways to both prevent and reduce traffic deaths and injuries. It is critical to note at the outset that improvements to crashworthiness that would allow people to better survive crashes remain far from exhausted. For example, although the Research Safety Vehicle designed by NHTSA in the last 1970s was crash-safe at 50 miles per hour, today the minimum safety standard for frontal impact is only 30 miles per hour with 35 miles per hour testing in the new car assessment program. This occupant protection standard is one of several NHTSA performance standards that are badly out of date and should be upgraded.

If we know anything, it is that technology is imperfect. Making vehicles safer when they do crash should go hand-in-hand with making them smarter.

We certainly recognize the potential for crash avoidance technologies to also reduce traffic deaths. Consumer Reports Auto Testing Team has driven thousands of miles in cars that can steer within a lane and adjust speed automatically using increasingly prevalent technologies like automatic emergency braking and lane-keeping assist. We also have seen that these technologies are not perfect and vary in quality among manufacturers and that some raise novel risks. What we hear again and again in this context about safety gains is we are saying clearly that the safety benefit of fully self-driving vehicles are simply, at this point, not known.

There are real limits to current technologies. There is a handoff problem in communications with consumers and letting them know when they need to take over vehicle functioning. There is issues with user interface and with software updates that may or may not be clear to consumers who are using their vehicles. And there are profound and fully knotty ethical implications of algorithms.

A reality check is provided by our testing, which shows performance issues with current technologies in sunny, rainy, snowy, or icy conditions. That is a lot of weather to challenge these systems.

As this suggests, there is much work that needs to be done before cars drive themselves. Automated driving technologies cannot

and should not be oversold, particularly when consumers still must be prepared to take over the controls. Failing to appropriately communicate the limits or design systems with appropriate checks on foreseeable use and misuse of systems can give consumers a false sense of security and even cost lives. As more vehicles with automated driving technologies hit the market, we will carefully evaluate them and report to consumers on their safety. For its part, NHTSA should ensure that companies put consumers first by collecting and publishing data and what has collected sufficient evidence by setting robust safety standards.

The agency has indicated the Federal Automated Vehicles Policy guidance is an initial regulatory framework. It covers a wide range of subjects but we think it is light on specific choices that companies should make to assure safety. We urge lawmakers to take three key steps. First, to recognize that NHTSA remains chronically under-resourced. To improve and ensure consumer trust in automated vehicles, the agency must receive its requested funding so it can independently and thoroughly assess the safety of these systems.

Members should also recognize a few fundamental steps needed to assure effective oversight of automated driving. Here are three: We call on companies first to give their safety data to NHTSA and the public. Dr. Rosekind indicated that the data would show what is best. That makes sense but right now, the safety benefits of autonomous driving are speculative and based on data held entirely by the companies. Regulators and consumers both deserve to know the basis the companies use to determine that an automated technology is safe, particularly if they are making claims that this technology performs more safely than human drivers.

Second, NHTSA's enforcement capability should be strengthened. NHTSA has the authority to deem automated system risks to be safety-related defects but its practical ability to get unsafe cars off the road quickly has long been limited and is challenged in a world of instant software updates. Congress should give the agency imminent hazard authority so that it can take immediate action.

Third, NHTSA and other relevant agencies must take a hard look at the risks of a lack of cybersecurity in vehicles. The recent Dyn attack raises the question of what must be done to safeguard consumers and this issue can't wait.

NHTSA has repeatedly requested imminent hazard authority, I will note, and it is part of Ranking Member Schakowsky's Vehicle Safety Improvement Act, which we support.

In conclusion, automated innovation is essential. It has included features with major benefits to consumer safety, such as automatic emergency braking. But our ambitions in this area must be balanced with accountability and a full view of how humans interact with this technology. Building public trust is critical. Public data, vigorous agency oversight, and attention to a total-vehicle and consumer-first approach will be needed to ensure that safety keeps pace with technological change.

[The prepared statement of Ms. MacCleery follows:]

Statement of Laura MacCleery
Vice President, Consumer Policy and Mobilization, Consumer Reports
Before the U.S. House of Representatives Committee on Energy and Commerce
Subcommittee on Commerce, Manufacturing, and Trade

"Disrupter Series: Self-Driving Cars"
Tuesday, November 15, 2016

Summary

- Traffic deaths on U.S. roads rose to 35,092 last year and are estimated to have jumped another 10% in the first half of 2016. This is a public health crisis. We urgently need to find ways to prevent more traffic deaths and injuries and meaningfully counter this trend.

- Crashworthiness improvements should continue or even be accelerated as an accompaniment to technological advances, and defects and recalls should be more aggressively overseen and pursued as warranted by the facts.

- Automated driving systems—intended to yield self-driving cars—are advancing rapidly, and may be part of the solution. However, there is much more work that needs to be done to test and demonstrate safety benefits and protect consumers from novel risks.

- This is particularly true regarding cars with semi-autonomous features, which if deployed irresponsibly can give consumers a dangerously false sense of security.

- As the industry's regulator, NHTSA can ensure that companies put consumers first by setting robust safety standards. NHTSA's recent guidance rightly covers a wide range of important subjects, but it is light on specific steps companies must take to assure safety.

- To protect the public and build trust in automated driving features, Congress should provide NHTSA the resources to independently and thoroughly assess the safety of automated systems and better understand how drivers interact with these new features.

- Members also should push for fundamental steps to be taken that go beyond the Federal Automated Vehicles Policy. In particular, companies should give their safety data to NHTSA and the public to demonstrate the benefits of these technologies and allow public examination, and NHTSA's enforcement capabilities should be strengthened.

Testimony

Good morning, Chairman Burgess, Ranking Member Schakowsky, and members of the Subcommittee. My name is Laura MacCleery, and I am Vice President of Consumer Policy and Mobilization for Consumer Reports, an independent, nonprofit organization that works side by side with consumers to create a fairer, safer, and healthier world. My career includes more than fifteen years as an advocate for public health and consumer safety, with a number of those spent specializing in auto safety issues.

I want to start today by honoring the life and legacy of Clarence Ditlow, who died last week of cancer. As executive director of the Center for Auto Safety, Clarence was a tireless advocate for consumers who made immeasurable contributions through his years of service to the public good. He single-handedly was responsible for pushing automakers and regulators to conduct countless life-saving recalls. While his influence dates back to the Ford Pinto, Clarence's work in just the last three years helped get to the bottom of concealed defects in Chrysler, GM, and Takata products, and ensured that consumers finally will be able to publicly access all technical service bulletins from manufacturers to dealers about safety and other defects.

Clarence's dogged persistence was legendary, and his accomplishments spanned decades. He will be sorely missed by the advocate community and consumers nationwide, whose cars are safer because of his work. At Consumer Reports, we consider it a responsibility and a privilege to carry forward our shared dedication to safer cars and accountability for corporate malfeasance.

We will keep pushing for ever safer cars and help consumers make informed choices that assist them in staying safe on the road, through evaluations at our Auto Test Center, journalism, policy work, and consumer mobilization.

As you know, traffic deaths on U.S. roads rose to 35,092 last year and are estimated to have jumped another 10% in the first half of 2016.[1] This is a public health crisis. We urgently need to find ways to prevent more traffic deaths and injuries and meaningfully counter this trend. Past experience shows that facing this challenge will demand strong, evidence-based strategies, which can be based at least in part on emerging technologies.

It is critical to note at the outset, however, that improvements to crashworthiness, while less trendy than the debate over automated vehicles, also remain far from exhausted. For example, although the Research Safety Vehicle designed by NHTSA in the late '70s was crash-safe at 50 miles per hour,[2] today the minimum safety standard for frontal impact is set at 30 miles per hour, with a 35-mile-per-hour test for the New Car Assessment Program (NCAP). This is not just limited to frontal impact, though; many of NHTSA's performance standards are badly dated, and should be changed to better protect the public than they do today. In the meantime, we strongly support NCAP and the tests done by the Insurance Institute for Highway Safety (IIHS) that provide more up-to-date comparative information on the safety of new vehicles to assist consumers with vehicle purchasing decisions and encourage motor vehicle

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[1] National Highway Traffic Safety Administration, *Early Estimate of Motor Vehicle Traffic Fatalities for the First Half (Jan–Jun) of 2016,* Traffic Safety Facts, Report No. DOT HS 812 332 (Oct. 2016) (online at crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812332).

[2] *See* Center for Auto Safety, "Destruction of the Research Safety Vehicle (RSV)" (Sept. 9, 2002) (online at www.autosafety.org/destruction-research-safety-vehicle-rsv).

manufacturers to make safety improvements. Consumer Reports' vehicle recommendations and overall scores incorporate both NCAP and IIHS ratings and NHTSA's should update NCAP to ensure that the tests are appropriately challenging.[3] Today, most vehicles receive four or five stars in NCAP's 5-star safety ratings, and so we are concerned that the ratings have become less meaningful to consumers.

As consumers will be far more likely to entrust their lives to crash-safe vehicles, these improvements should be viewed as a necessary corollary to automated crash avoidance systems. Moreover, putting consumers' lives into the hands of software updates requires agile and timely agency oversight and a far more aggressive, updated and responsive approach to defect investigation than we have seen at any time in past or recent history.

To reduce traffic deaths, automated driving systems—intended to yield fully and partially self-driving cars—are advancing rapidly, and may be part of the solution. Our auto testing team has driven thousands of miles in cars that can steer within a lane and adjust speed automatically, using increasingly prevalent technologies like automatic emergency braking and lane-keeping assist. As these features continue to lay the groundwork for automated driving, significant investments should be made in research and testing, including at the National Highway Traffic

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[3] *See* Consumers Union, *Comments of Consumers Union to the National Highway Traffic Safety Administration on the Request for Comments: New Car Assessment Program* (Feb. 16, 2016) (online at consumersunion.org/wp-content/uploads/2016/02/NHTSAComments_NCAP_216.pdf) (Docket No. NHTSA-2015-0119).

Safety Administration (NHTSA). Congress should provide the necessary funding for this endeavor, which has been requested repeatedly.[4]

There is much additional work that needs to be done as these technologies develop. Self-driving vehicles would represent the single biggest change in the relationship between cars and their passengers since the invention of the motor vehicle itself, and they warrant diligent oversight at every step of their development to ensure that they are safe. This is particularly true regarding cars with semi-autonomous features, as these vehicles may be marketed in a manner to make it seem to consumers that the car can drive itself. This technology—and the ability to take human drivers out of the equation—cannot and should not be oversold, as in reality consumers need to be prepared to take over the controls at a moment's notice. Failing to appropriately communicate the limitations or design systems with appropriate checks on foreseeable use and misuse of the system can cost lives and give consumers a false sense of security in an automated car's capabilities.

Some companies appear to be struggling with the responsible deployment of new technologies. For example, Tesla's decision to market its system as "Autopilot," and its initial choice to fail to ensure that drivers keep their hands on the wheel, was troubling to us. Tesla has taken steps to improve Autopilot, but it has thus far failed to fully address these concerns. Of course, it is not just Tesla that offers self-driving features. The December 2016 issue of Consumer Reports—currently on newsstands and at CR.org—identifies about a dozen models

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[4] *See, e.g.*, National Highway Traffic Safety Administration, *Budget Estimates – Fiscal Year 2017* (Feb. 2016) (online www.nhtsa.gov/staticfiles/administration/pdf/Budgets/FY2017-NHTSA_CBJ_FINAL_02_2016.pdf).

with semi-autonomous technology.[5] As more of these vehicles hit the market, we will be carefully evaluating them for safety and reporting to consumers on our findings.

As the industry's regulator, NHTSA can ensure that companies put consumers first by collecting and publishing data on the systems, and when it has collected appropriate evidence, by setting robust safety standards. NHTSA has said that the Federal Automated Vehicles Policy guidance is an initial regulatory framework, designed to set voluntary best practices while the agency continues to research vehicle automation. The Policy rightly covers a wide range of subjects that companies should consider, but it is light on specific choices that companies must make to assure safety.

Members of Congress should have two main responses to this Policy. First, members should recognize that NHTSA remains chronically under-resourced. If members of this Subcommittee support the advancement of automated technologies, they should push for the agency to receive its requested funding—particularly for research on vehicle electronics and software, including factors related to human-machine interface—so that it can independently and thoroughly assess the safety of automated systems and better understand how drivers interact with these new features. It would help consumers to be able to trust automated technologies if NHTSA carried out this work.

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[5] Consumer Reports, "Consumer Reports Magazine – December" (Oct. 24, 2016) (online at www.consumerreports.org/cro/magazine/2016/12/index.htm); Consumer Reports, "What You Need to Know About Semi-Autonomous Technology" (Oct. 24, 2016) (online at www.consumerreports.org/self-driving-cars/what-you-need-to-know-about-semi-autonomous-technology).

Second, members should recognize the fundamental steps—beyond the Federal Automated Vehicles Policy—that should be taken to ensure effective oversight of automated driving technologies. We have made a number of recommendations in oral comments to NHTSA, addressing various issues ranging from manufacturers being clear with consumers about the limitations of automated features, to the role of the states, to how the agency should approach ethical considerations.[6]

But I want to highlight two recommendations in particular:

First, we call on companies to give their safety data to NHTSA and the public. Right now, the safety benefits of autonomous driving are entirely speculative and based on data held internally. Regulators and consumers deserve to know the basis that companies use to determine that an automated technology is safe. This kind of disclosure would only help companies build trust in their products, which right now is lacking, according to recent research.

Second, NHTSA's enforcement capabilities should be strengthened. NHTSA makes clear in a recent Enforcement Bulletin that it has the authority to deem reasonably foreseeable automated system risks to be safety-related defects. But NHTSA's practical ability to get unsafe cars off the road quickly has long been limited. For the agency to be the kind of tough watchdog consumers deserve, Congress should give the agency the authority to take immediate action on defects that present an imminent hazard, or those that substantially increase the likelihood of

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[6] Consumers Union, *Oral Comments of Consumers Union to the National Highway Traffic Safety Administration on the Federal Automated Vehicles Policy; Public Meeting* (Nov. 10, 2015) (Docket No. NHTSA-2016-0090).

serious injury or death. NHTSA has repeatedly requested this authority and it is included in the proposed Vehicle Safety Improvement Act.[7]

In conclusion, automotive innovation is essential and has brought about features with major benefits to consumer safety, such as automatic emergency braking. But our ambitions must be balanced with accountability. When emerging technologies bring with them new risks, it must be the company, and not the consumer, that shoulders them. This is particularly needed because consumers will be asked to trust and accept these new technologies. Public data, vigorous agency oversight, and attention to a total-vehicle and consumer-first approach, will be needed to ensure that safety keeps up with the speed of technological change.

Thank you.

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[7] *See, e.g.*, National Highway Traffic Safety Administration, GROW AMERICA Act at 183 (Apr. 7, 2015) (online at www.transportation.gov/sites/dot.gov/files/docs/GROW_AMERICA_Act_1.pdf) and National Highway Traffic Safety Administration, Federal Automated Vehicles Policy at 75 (Sept. 20, 2016) (online at www.nhtsa.gov/nhtsa/av/pdf/Federal_Automated_Vehicles_Policy.pdf); H.R. 1181.

Mr. BURGESS. The chair thanks the gentlelady. Ms. Wilson, you are recognized for 5 minutes, please, for an opening statement.

STATEMENT OF ANN WILSON

Ms. WILSON. Chairman Burgess, Ranking Member Schakowsky, members of the subcommittee, my name is Ann Wilson and I serve as the Senior Vice President of Government Affairs for the Motor and Equipment Manufacturers Association or MEMA.

Thank you for the invitation to testify before you today on automated vehicles and NHTSA's Automated Vehicle Policy.

MEMA is the leading international trade association of the fast-changing mobility industry. By directly employing more than 800,000 Americans and generating a total employment impact of 4.2 million jobs, MEMA member companies are the largest employer of manufacturing jobs in the U.S.

MEMA applauds NHTSA for developing the Federal Automated Vehicle Policy. Given the rapidly evolving advances in vehicle technologies, we believe this policy, as opposed to regulations, that clarifies a national framework with a clear role for the states sets pathways for all stakeholders to navigate the complexities of automated vehicle technologies.

We are currently working with our members to provide NHTSA with specific comments by November 22nd and we will provide those comments to the subcommittee.

We are also committed to a continuous dialogue with NHTSA on the AV policy. However, we urge NHTSA to clarify the policy in the near-term with the input received from the public listening sessions and the written comments.

Today, I wanted to lay out a few challenges and opportunities MEMA has already identified. First, MEMA would strongly urge the agency to treat test vehicles covered by the AV policy separately from production vehicles. Typically, these vehicles are company-owned and operated only by trained employees and are not intended for production and sale to the general public. For instance, it is not clear in the policy whether NHTSA intends component manufacturers or other entities should apply for exemptions for test vehicles in order to test and evaluate Level 2 through 5 systems on public roads.

With the rapid evolution of these technologies, time is critical. The process outlined in the AV policy for test vehicles, including the exemption process, would delay innovation.

We also have some serious concerns about the protection of manufacturers' intellectual property rights during the testing phase.

We are also seeking an additional clarification with respect to test vehicles. Under Section 24404 of the recently enacted FAST Act, OEMs can test and operate vehicles that do not meet Federal Motor Vehicle Safety Standards, provided they are not offered for sale. But this provision does not include component manufacturers and we would urge the committee to clarify this provision at the first opportunity.

Second, in 2015, MEMA and the Boston Consulting Group released a report examining the safety benefits of Advanced Driver Assistance Systems or ADAS technologies. The study found that these technologies can provide immediate safety benefits and

formed a pathway, as you have heard, to a partially and fully automated vehicle fleet that could virtually eliminate traffic fatalities. But it is important to note that some of these ADAS technologies constitute the SAE Level 2 automated systems. These include technologies, as you have heard today, like AEB, adaptive cruise control, and others. Technology is currently available on a wide range of vehicles. MEMA urges NHTSA to further delineate the impact that the AV Policy has on Level 2 technologies.

Third, as previously recognized, NHTSA's AV Policy also applies to all vehicles. While much of the testimony you have heard today is directed towards the automotive industry, many of the opportunities and challenges apply to both passenger and commercial vehicles. The commercial vehicle component supplier members of MEMA are particularly concerned about the IP protection as safety systems and other new technologies are key differentiators for trucking fleets. There are many other parties in the commercial market who must be engaged in the development and implementation of AV Policy for all the challenges and benefits to be fully explored. We encourage NHTSA to continue interacting with those parties and we would encourage this committee to work with them, too.

Fourth, original equipment component suppliers do not always have complete visibility into the full scope of issues to properly assess performance. Once a component or a system has been integrated into a protection vehicle, it is important that all stakeholders have a clear understanding of NHTSA's expectations of the roles and responsibilities, particularly for OEMs and component manufacturers. These distinctions should be clarified and articulated in the context of the policy.

And finally, MEMA encourages NHTSA to take the lead with their global counterparts to cooperate in developing an AV policy beyond the U.S. for the benefit of the global community. The earlier we get ahead of opportunities to align, the better it will be for all stakeholders, government, industry, and the driving public.

In conclusion, the members of MEMA are committed to vehicle safety and are at the forefront of developing additional lifesaving technologies.

We appreciate this opportunity to testify and I would be happy to answer your questions.

[The prepared statement of Ms. Wilson follows:]

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Testimony of Ann Wilson

House Energy & Commerce Committee

Subcommittee on Commerce, Manufacturing and Trade

"Self-Driving Cars"

November 15, 2016

Introduction

Chairman Burgess, Ranking Member Schakowsky, members of the Subcommittee: Thank you for the invitation to testify before you today on automated vehicles.

The Motor & Equipment Manufacturers Association (MEMA) is the leading international trade association in the fast-changing mobility industry. Representing vehicle suppliers that manufacture and remanufacture components, technologies, and systems for use in passenger cars and heavy trucks, MEMA works to ensure that the marketplace and legislative and regulatory environment support the development and implementation of new technical capabilities transforming the automotive industry, including autonomous vehicles and vehicle connectivity.

Our members lead the way in developing advanced, transformative technologies that enable safer, smarter and more efficient vehicles, all within a rapidly growing global marketplace with increased regulatory and customer demands. Vehicle suppliers play a key role in the motor vehicle industry particularly in developing and deploying a whole host of Advanced Driver Assistance Systems (ADAS), vehicle-to-vehicle (V2V) technology and other advanced vehicle safety innovations. Working collaboratively with vehicle manufacturers (a.k.a. original equipment manufacturers, or OEMs), suppliers are critical in the ongoing development and implementation of these technologies, which are the building blocks necessary to enable highly automated vehicles to reach their full potential.

By directly employing more than 871,000 Americans and generating a total employment impact of 4.2 million jobs, MEMA's supplier companies are the largest sector of manufacturing jobs in the U.S. MEMA represents suppliers in all areas of mobility through its four divisions: Automotive Aftermarket Suppliers Association (AASA), Heavy Duty Manufacturers Association

AASA HDMA MERA OESA

(HDMA), Motor & Equipment Remanufacturers Association (MERA), and Original Equipment Suppliers Association (OESA).

Vehicle Safety Today

Vehicle component suppliers are dedicated to vehicle safety with the design and manufacture of their components and systems. To fully appreciate the state of vehicle safety today, over 50 years of crash data show that an estimated 613,501 lives have been saved by vehicle safety technologies and associated Federal Motor Vehicle Safety Standards (FMVSS).[1]

Today, there are many advanced safety features available in the vehicle marketplace ranging from passive to active systems that either warn, aid and/or assist a driver in order to avoid or mitigate vehicle crashes. These advanced technologies have foundational systems upon which the more complex systems are built. These technologies are mature, affordable and effective.

As over 94 percent of traffic crashes are the result of human error, the potential impact of automated vehicles is wide reaching and unprecedented. Suppliers have long been creating foundational ADAS features and V2V communications with the forward-looking approach to make these systems increasingly more automated. Ultimately, goal is to improve the safety, mobility and productivity of all road users.

Advanced Driver Assistance Systems (ADAS) and the Impact on Safety

In 2015, MEMA and the Boston Consulting Group (BCG) released a report exploring the safety benefits of Advanced Driver Assistance System (ADAS) technologies. ADAS technologies, many of which are referred to as crash avoidance technologies, can provide immediate safety benefits and form the pathway to a partially and fully automated vehicle fleet that could virtually eliminate traffic fatalities. The study found that a suite of ADAS technologies has the potential to prevent 30 percent of all crashes – a total of 10,000 lives saved annually.[2] It is important to note that some of these ADAS technologies constitute ASAE Level 2 automated systems.

Highly Automated Vehicles

Today's ADAS technologies are the safety foundation upon which the highly automated and self-driving cars of tomorrow are built.

As you know, NHTSA recently announced a Federal Automated Vehicle Policy, designed to establish vehicle performance guidance for automated vehicles, identify distinctions between federal and state roles, and to address current & future tools and authorities.

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[1] NHTSA, "Lives Saved by Vehicle Safety Technologies and Associated Federal Motor Vehicle Safety Standards, 1960 to 2012: Passenger Cars and LTVs" DOT HS 812 069, January 2015.
[2] MEMA and BCG, "A Roadmap to Safer Driving Through Advanced Driver Assistance Systems," page 2, September 2015.

MEMA applauds NHTSA for developing guidance at this critical juncture. Given the rapidly evolving technological advances in vehicle technologies, we believe guidelines – as opposed to regulations – that clarify a national framework with a clear role for the states sets pathways for all stakeholders to navigate the complexities of automated vehicle technologies and vehicle supply chains.

MEMA wants to ensure that these pathways avoid unintended impediments to product design, enhancements and innovative advancements in automated technologies. The benefits of these technologies are evolutionary; thus, the endeavor to tackle public policies while also balancing innovation is massive and requires the collaboration and cooperation among all public and private stakeholders.

While we understand that some aspects of this policy may become future requirements (i.e. the voluntary "Vehicle Performance Guidance" information collection request),[3] the guidance approach is still appropriate for the larger scope of this policy in NHTSA's ability to stay flexible on these quickly evolving technologies. Even though voluntary, as with other agency guidelines, there is a *de facto* establishment of criteria that will be used by the vehicle industry and its stakeholders going forward. Therefore, it is very important to get the foundational policy as clear as possible in these early stages for all entities to prevent uncertainty from inadvertently delaying technology development.

MEMA encourages NHTSA to take the lead with their global counterparts to cooperate in developing AV policy beyond the U.S. for the benefit of the global community that are working to manage this transformative technology. Unified approaches with our international partners can bring about greater compatibility across national regimes. The earlier we get ahead of opportunities to align the better it will be for all stakeholders – government, industry, and the driving public.

Representing a wide range of suppliers of original equipment and aftermarket technologies for both light and heavy vehicles, MEMA can provide input to NHTSA on the multi-faceted issue of automated vehicles. MEMA anticipates that several members will also provide individual comments specific to their expertise and product offerings.

Vehicle Performance Guidance for Automated Vehicles

While we support the approach set forth by NHTSA, there are specific areas that we believe could benefit from clarification. From the outset, the policy indicates that the vehicle

[3] 81 Fed. Reg. at 65709

performance guidance framework applies to both test and production vehicles; to both original equipment and replacement equipment (or updates); to cross-cutting functions and to specific automation functions. Some elements of this framework may not be equitably applicable to test vehicles and to production vehicles. Vehicles used for the purposes of testing and evaluation during developmental phases of a given vehicle technology system are often modified and instrumented. They are driven by professional drivers who are typically specifically trained by the company conducting the test evaluation. During the testing process, a system will be adjusted, refined, and re-adjusted – sometimes within hours and days, sometimes over a period of weeks and months.

Testing vs. Production - There are inherent and critical differences between highly automated vehicle (HAV) systems that are exclusively being evaluated and tested by trained professionals versus HAV systems that are intended for production and deployed to the general public. The AV policy does not make a distinction between test vehicles and production vehicles. It is important that the agency acknowledge and delineate these key differences as it relates to the expectations of the safety assessments and other measures in the policy.

Some elements of the 15-point Safety Assessment Letter (SAL) may not be applicable to the HAV systems being tested. And while an entity can indicate "not applicable" for some of these elements, the optics of a (SAL) that could potentially have several points marked "N/A" may raise flags unnecessarily. Essentially, testers want assurances that NHTSA understands these cases. Therefore, MEMA urges NHTSA to offer and permit a modified and truncated SAL just for any entity conducting testing and evaluation of HAV systems on public roads and a separate SAL version for companies deploying HAV systems in vehicles for sale or lease to consumers.

Roles & Responsibilities – Just as there are key differences between testing and production vehicles, there are also key differences within the various entities encompassed by the federal AV Policy. Specifically, MEMA emphasizes the need for NHTSA to clarify the roles and responsibilities for suppliers versus OEMs.

Original equipment suppliers do not have visibility into the full scope of issues to properly assess performance once it has been integrated in production vehicles. Details regarding how specific equipment interacts with other components or systems in a production vehicle are not always known to the supplier. When developing a product, a supplier may create a system independent of their OEM customer or, a supplier may create and develop a system collaboratively either with another supplier and/or with their OEM customer. Once the customer has it integrated with a production vehicle's system, there are factors that are unknown to the supplier; also, an OEM may also make modifications over time (e.g. over-the-air update) where, again, a supplier would not know the conditions of how an OEM updated the integrated HAV system.

It is important for all stakeholders to have a clear understanding of NHTSA's expectations of the roles/responsibilities – particularly for OEMs and suppliers. Therefore, these distinctions should be clarified and articulated in the context of the AV Policy.

Exemption & Interpretations

The AV Policy stated that exemptions from "existing standards" are intended to provide flexibility to the general requirements that manufacturers must comply with FMVSS for limited exceptions and for limited periods of time. These exemptions are intended to be granted for in-production, available for sale vehicles. However, what is not clear is whether NHTSA intends that suppliers or other entities should also apply for exemptions for test vehicles in order to test and evaluate Level 2-5 systems on public roads. If that is the case, MEMA would urge the agency to reconsider this approach.

As repeated throughout this testimony, test vehicles should be treated differently with regards to many elements of the AV Policy, as well as to the agency's existing regulatory tools. Moreover, the time in which it would take to undergo an exemptions application process would, in the near term, unduly delay test programs and ultimately, in the long term, stifle technology advancements. Furthermore, suppliers and others are currently actively testing Level 2 and up vehicles in various states (per the states' respective laws and requirements). If exemptions were suddenly deemed necessary by NHTSA, such action could potentially halt these existing test programs.

Also, we are also seeking clarification with respect to test vehicles; under Section 24404 of the recently enacted FAST Act, OEMs can test and operate vehicles that do not meet Federal Motor Vehicle Safety Standards (FMVSS), provided they are not offered for sale, but this provision does not include suppliers.

Finally, we urge the committee and NHTSA to recognize that there are other parties who must be engaged in the development and implementation of the AV Policy for the challenges and benefits to be fully explored. The Commercial vehicle members of MEMA are particularly concerned about the protection of intellectual Property as safety systems and other new technologies are key differentiators for fleets. Going forward, we encourage NHTSA and this committee to work closely with commercial and heavy duty vehicle stakeholders.

Conclusion

The members of MEMA are committed to vehicle safety, and are at the forefront of developing additional life-saving technologies.

We support a guidelines-based approach by NHTSA for Automated Vehicles, because we believe they will be more effective in keeping pace with rapidly changing vehicle technologies. We also believe the guidelines put forth can benefit from clarification and refinement, including greater distinctions between testing and production vehicles, certification and reporting responsibilities between suppliers and automakers, clarifications with respect to exemptions for test vehicles, and collaboration with heavy duty vehicle stakeholders.

We appreciate this opportunity to testify before you and will be happy to answer your questions.

Mr. BURGESS. The chair thanks the gentlelady.

Mr. Shapiro, you are recognized for 5 minutes for an opening statement, please.

STATEMENT OF GARY SHAPIRO

Mr. SHAPIRO. I am Gary Shapiro, President and CEO of the Consumer Technology Association. I just want to thank you, Mr. Chairman Burgess and Ranking Member Schakowsky, and members of the subcommittee as well for inviting me to testify on this important issue.

I also want to thank you for hosting these Disrupter Series. This is really important. You have brought attention to new technologies like 3D printing and drones, which are fundamentally changing the world. Actually, at CTA we created a Disruptive Innovation Council last year and it supports those companies that are developing technologies and services that are disrupting traditional business models, actually creating new markets, and, frankly, delighting consumers. So, this is a good thing. That is what this country was based on is positive disruption.

And that is what we are talking about here. We actually represent over 2,200 American consumer technology companies. We own and produce the CES. It is the world's largest business, coolest, funnest event. You are all invited to attend. If you come to Las Vegas next January you will see literally 3,900 companies, including 300 of them that are focused on connected vehicles, driverless cars. Most of the major auto companies are there as well. And you will see the future right there in one place.

We also, as an association, represent much of the vehicle technology ecosystem. Our member companies are fundamentally revolutionizing the transportation network and are well on their way to making self-driving vehicles a reality.

This comes about because the internet, wireless, and sensing technology are poised to revolutionize the auto sector, as they have other industry sectors. While these changes disrupt all business models, they lead to economic growth, a better standard of living, improved health and safety, and new opportunities to expand entrepreneurship, provide American leadership and solve real-world major problems.

You have heard over and over today about self-driving cars that will save over 30,000 lives a year and prevent hundreds of thousands of injuries. They will also free up our time, enhance the travel business so more Americans will use cars to travel further and see America and actually change our view of cars so they will be a service, rather than a product.

So, I think what we should do is set a goal of cutting American road fatalities by a certain date and challenge interested groups to gather and forge a path forward to solve the many legal, legislative and standardization uncertainties to achieve that outcome.

One question that has already come up today and people are asking is whether this technology must be perfect before it deployed. Perfection may be an unreachable goal but any significant improvement over the status quo of 35,000 annual deaths should be welcome. In fact, though, as you have hard, driver assist technology is already saving lives, avoiding accidents, and paving the way for

driverless innovations. We welcome and need technologies that help drowsy or inattentive drivers stay focused or provide specific responses, such as automatic braking and lane drift avoidance, all of which are available in newer models today.

Further, the aftermarket industry does provide a valuable service in allowing consumers to add lifesaving technology to vehicles they already own and that is important because if we wait for the whole fleet to turn over, we are waiting 20 or 30 years to save those thousands of lives of each year.

Our research we have done with consumers confirms there is strong interest in the early stages of self-driving technology. We did a recent study with 2,000 consumers and three in four are excited about the benefits of self-driving cars. More than 60 percent are interested in replacing the car or truck they own with a completely self-driving vehicle.

Of course, you have heard, transportation is a national system. We need uniformity to ensure a national single market, promote safety, and provide consistency.

CTA was encouraged by NHTSA's Federal Automated Vehicles Policy and its recognition of the need for self-driving vehicles. More, NHTSA recognized the importance of flexibility for the industry to continue to innovate with appropriate supervision at the state and Federal level. We appreciate the leadership, however, we do have several concerns with the policy, which we will be filing formal comments on.

While DOT is a primary regulator for self-driving vehicles, other agencies also have a role. Representatives from the NTIA, the FCC, FDC, DoD, and others have asked how they can provide input for their needs, contribute their expertise on spectrum, interoperability, cybersecurity, and privacy, and simply stay informed.

And I applaud the DOT for taking a leadership role and seeking broad input but consensus, national consensus on self-driving vehicles is so important that we need all the believers and the stakeholders together working towards a national goal of saving lives and resolving impediments to get there. This action requires government facilitation and leadership at the very top. We did this, and I was personally involved with our shift to high-definition television, and also did it as we created commercial rules for the internet. The U.S. led the world in both those endeavors because we had industry together, all the interested parties working with government. The result for both has been huge boots in U.S. leadership in content creation and commercial internet ventures.

Self-driving vehicles would be our gift to future generations. They will result in fewer deaths and injuries, a cleaner environment, more freedom and greater mobility. If industry and government work together on a shared national goal, we can remove every impediment and stop the carnage on American roads.

[The statement of Mr. Shapiro follows:]

House Committee on Energy and Commerce; Subcommittee on Commerce, Manufacturing, and Trade
Disrupter Series: Self-Driving Cars
Tuesday, November 15, 2016

Testimony of Gary Shapiro, President and CEO, Consumer Technology Association

Thank you Chairman Burgess, Ranking Member Schakowsky, and members of the subcommittee, for inviting me to testify today on the future of self-driving vehicles. I am Gary Shapiro, president and CEO of the Consumer Technology Association (CTA).

The Consumer Technology Association (CTA)™ represents more than 2,200 member companies who comprise the $287 billion U.S. consumer technology industry. We also own and produce CES – the Global Stage for Innovation, held each January in Las Vegas. I am fortunate to have a front row seat each day as our members develop and introduce innovative and life-changing products and services, create jobs, and grow the economy. At CTA, we work to advance public policy that fosters innovation, advances competitiveness, and promotes job and business creation.

I'd like to thank the subcommittee for holding the disruptor series and bringing attention to new technologies like drones and 3-D printing that are changing the world. The rapid shift in technology – from the internet to wireless to low-cost sensing devices to data analysis – has changed our world. It has enabled nimble, innovative companies to reshape our economic ecosystem. These companies are reinventing legacy markets and creating jobs while delighting consumers. At CTA, we created a Disruptive Innovation Council to support the growth of innovative companies developing technologies and services that are disrupting traditional business models and creating new markets. As new businesses come to the market, many of them face burdensome government regulations based on old models.

CTA welcomes and appreciates the leadership of this Committee in recognizing that disruption is part of innovation and progress and is a necessary but sometimes painful precursor to economic growth, better health and providing incredible new opportunities to expand entrepreneurship, improve education and solve major problems. I'd also like to take the opportunity to thank Chairman Upton for his years of leadership at the head of the Energy and Commerce Committee.

This hearing could not have come at a more appropriate time. Transportation is on a path toward greater safety, increased efficiency, greater mobility and lower prices. The transportation market is ripe for disruption; further, it needs it.

The Consumer Technology Association represents much of the vehicle technology ecosystem – from automakers and suppliers to navigation and mapping companies to service providers and aftermarket suppliers and installers. Our member companies are revolutionizing the transportation network and are well on the way to making self-driving vehicles a reality. Traditional automakers are partnering with technology companies and startups that are taking an entirely new approach to vehicle design and operation. It seems every other day we are seeing new partnerships announced, from Fiat Chrysler (FCA) and Google to BMW, Intel and Mobileye. Uber is testing self-driving ride-sharing in Pittsburgh and in Colorado, Otto's self-driving truck just made a 120-mile trip down the interstate to deliver a trailer full of Budweiser. At CES 2017, our members will showcase the latest transportation technology that will disrupt markets, increase safety, and revolutionize the way we do business and operate on-the-go.

The Benefits of Self-Driving Technology

The National Highway Traffic Safety Administration (NHTSA) expects more than 35,000 people to die on U.S. roads in 2016 and hundreds of thousands more injured, reaching a "crisis" level according to Administrator Mark Rosekind. Last year, U.S. vehicular fatalities climbed seven percent – at that time, the largest year-over-year increase in 40 years. The vast majority of these crashes are caused by human error including driver distraction, drowsiness, inattentiveness and use of drugs or alcohol.

Properly implemented, fully self-driving vehicles and the partially-autonomous intermediate steps involving driver-assist technologies will dramatically reduce crashes caused by human error. Not only will self-driving vehicles save lives, they will also reduce congestion and pollution, and will provide new opportunities for mobility to seniors and people with disabilities.

While much of the world is excited about the benefits of self-driving vehicles and eager to see progress, some argue self-driving vehicles should not be deployed until systems are perfect. This is a dangerous road, as perfection may be an unreachable goal. Human drivers make many preventable errors while behind the wheel. Delaying driverless car deployment by insisting upon an impossible-to-achieve standard for perfection will cost tens of thousands of lives each year.

Thankfully, we don't have to wait for many of the benefits of self-driving vehicles to arrive – driver-assist technology is already saving lives, avoiding accidents and paving the way for completely driverless innovations still to come. We should promote these technologies that help drowsy or inattentive drivers stay focused, or provide specific responses such as automatic braking and lane-drift avoidance – all of which are now increasingly available in newer model vehicles. Further, the aftermarket industry provides a valuable service in allowing consumers to add life-saving technologies to vehicles they already own. As the average age of vehicles on the road today tops 11 years, aftermarket solutions will continue to play a critical role in the shift to self-driving vehicles.

Consumer Adoption

It is a fair question for any disruptive technology, but one rarely answered positively by consumers who have not actually experienced the disruption. In the late 1800s, if asked, people would have said they wanted faster, more comfortable horses. Consumers rarely said they wanted more technology, from the telephone to the computer to the remote control. In fact, Apple was proactive in introducing the iPad, iPhone and iPod. Yet lots of skeptics and media question whether consumers want self-driving cars.

CTA recently released a consumer research report, *Self-Driving Vehicles: Consumer Sentiments*, which illustrates consumer interest in the early stages of self-driving technology and shows great optimism for our driverless future. History continually shows consumers become more comfortable with innovations as the benefits become more apparent, erasing their initial concerns. CTA's study reflects growing support for self-driving cars – consumers want to see for themselves just what these driverless innovations have to offer. The driver-assistance features already on the market may be sparking the excitement, as more drivers experience the safety and convenience these new features provide.

CTA's study showed that three in four consumers are excited about the benefits of self-driving cars. More than 60 percent are interested in replacing the car or truck they own with a completely self-driving vehicle, and 70 percent have a strong interest in testing driverless technology for themselves.

Other research shows less consumer interest in self-driving cars. But the phrasing of a question in a survey has a real impact on the response. When consumers are asked about "control," responses are more negative. In one recent study of similar size to CTA's, half of consumers (51 percent) want to have full control of their vehicles, even if it is not as safe for other drivers. We

believe interest in the self-driving cars will continue to rise as drivers see and experience first-hand the benefits of these vehicles.

State Activity on Self-Driving Vehicles

We are at the beginning of a revolution, and we need smart policies at both the federal and state level to ensure our ability to realize the true potential of self-driving vehicles. Car makers have already put driverless cars on the road at test facilities such as GoMentum Station in California and Mcity in Michigan. For this technology to truly gain speed, car makers need to be able to test their cars on all kinds of roads in various conditions. Several states recognize the potential for self-driving vehicles and the need for real-world testing by providing opportunities and flexibility for the industry. However, transportation is a national system. We need uniformity across the states to ensure a national single market, safety, and consistency.

State policymakers have not waited for specific direction from the federal level to embrace the development and deployment of self-driving vehicles. Eight states including California and Michigan have enacted statutes authorizing the testing and operation of self-driving vehicles. Governors in Arizona and Massachusetts issued executive orders related to self-driving vehicles. Additionally, in 2016 seven states are considering legislation relating to self-driving technologies.

CTA's Position on the NHTSA Federal Automated Vehicles Policy

CTA was encouraged by NHTSA's Federal Automated Vehicles Policy and its recognition of the need for consistency for self-driving vehicles. Further, NHTSA recognized the importance of flexibility for the industry to continue to innovate. NHTSA also stated its intent to continue providing interpretations of current law and Federal Motor Vehicle Safety Standards (FMVSS), and to continue to provide exemptions for testing, both of which are needed in an ever changing and innovative field.

The guidelines distinguish between federal and state jurisdiction over licensing. NHTSA affirmed that in the case of highly-automated vehicles, states retain jurisdiction over a human driver responsible for operating the vehicle. The federal government's jurisdiction covers vehicle safety and performance, and therefore includes the "driver" when the self-driving vehicle or software is the primary operator. Further, NHTSA clarified that a fully self-driving vehicle does not require a licensed human driver.

Other encouraging aspects of the NHTSA guidance include several suggestions for states to expand testing and operating opportunities for manufacturers. The guidance encourages states

to evaluate and update current laws so as not to impede testing or operation of self-driving vehicles – e.g. human driver references in current law should be updated. Further recognizing the need for consistency across state lines, NHTSA said individual states should coordinate with other states on infrastructure needs and uniformity (signage, signals, etc.).

Of concern, however, is the suggestion that states should mandate NHTSA's voluntary 15-point safety checklist. This will lead to confusion for manufacturers (are the guidelines voluntary or mandated?) and inconsistency as states may or may not choose to follow the guidance, or may implement them at different times.

The list of possible new regulatory tools NHTSA suggests for self-driving vehicles also demands a closer look. Two of NHTSA's proposals would dramatically shift the approval process for vehicles and likely cause significant delays in bringing self-driving technologies to market. CTA urges Congress to carefully consider the negative implications such a shift would have on the entire automotive market before making statutory changes in NHTSA's authority.

Of most concern is the proposal to grant NHTSA pre-approval authority for new vehicles, which would overhaul NHTSA's current self-certification and compliance testing regime. Not only would this would be a major increase in authority for NHTSA by allowing it to approve every new model and model year vehicle before it comes to market, but it would likely slow the development and deployment process of life-saving technologies.

NHTSA alternatively suggests taking a hybrid approach similar to the Pipeline and Hazardous Materials Safety Administration (PHMSA) maintaining the self-certification standard for the FMVSS and requiring NHTSA pre-approval only for the automated systems not currently covered by the FMVSS. NHTSA would eventually integrate automated feature standards in the FMVSS via rulemaking. The NHTSA rulemaking process takes an average of 7 years. That is too long to wait to allow a technology that could save hundreds of thousands of lives to sit on the shelf.

Any changes to NHTSA's authority would require significant consideration of the potential impacts on the industry and new entrants to the market. The federal government must include all stakeholders in the process to ensure the technology is not limited by regulatory overreach.

This is not a complete evaluation of the NHTSA guidelines – CTA will file comments with the agency detailing our full position on the policy – but is meant to give the committee a broad overview of some of the key issues raised by the document.

Other Federal Stakeholders Should be brought to the Table

While DOT is the primary regulator for self-driving vehicles, other agencies may have a role to play as well. Representatives from other government agencies including the National Telecommunications and Information Administration (NTIA), Federal Communications Commission (FCC), Federal Trade Commission (FTC) and Department of Defense have asked how they can provide input for their needs, contribute their expertise and stay informed. Their input regarding spectrum, interoperability, cybersecurity and privacy should be sought to avoid competing or conflicting policies from various agencies with different interests and goals.

Americans with disabilities, the aged, and parents see liberating opportunities in self-driving vehicles. Health care prescribers, consumer groups and industry interested in the benefits of self-driving vehicles and others all have a stake.

I applaud the DOT for taking a leadership role and seeking broad input, but I feel consensus on self-driving vehicles is so important we need believers and stakeholders together working toward a national goal of saving lives and resolving impediments to get there.

This requires government facilitation and leadership at the top. We did it with deploying high-definition television and creating commercial rules for the internet. The result for both technologies has been huge boosts in U.S. leadership in content creation and commercial internet ventures.

We can do the same thing with self-driving vehicles – set a goal of cutting American fatalities by a certain date, and challenge representatives from interested groups to gather to clear the path to resolving the legal, legislative and standardization uncertainties to achieve that goal.

Cybersecurity and Privacy

As our vehicles become more and more technology-driven, concerns about security and privacy inevitably arise. Consumers trust their vehicles to safely and securely get them from point A to point B. Trust is essential to vehicle manufacturers – it is in their best interest to ensure the security of their products, as consumers will not purchase or use vehicles they do not view as safe and secure. Cybersecurity has become a significant concern for consumers and manufacturers alike, and the industry has significantly increased their investment and coordination in this area- creating industry best practices and an automotive information sharing and analysis center (Auto ISAC). NHTSA recently released draft cybersecurity best practices. While information sharing is a critical part of preventing and stopping attacks, government must be careful in how prescriptive they are on demanding data from private companies and consider intellectual property and competition concerns as well.

While guarding consumer privacy interests is important, we must not undercut the benefits that data can provide for convenience, consumer safety and the environment. There are vast benefits to data sharing which will contribute to better vehicles and increased safety. Cars will be able to provide and share real-time data that can keep us safer on the road. Continued innovation means the car will now automate many of the features and benefits currently included in standalone apps such as Waze. The ability to recognize an accident and share that information with other vehicles will prevent massive pile ups and deaths. Further, it could alert emergency services faster, potentially saving more lives. Sharing driver-generated data should not be limited by outdated government mandates.

Conclusion

With self-driving vehicles we can give future generations huge gifts! Dramatically fewer deaths and injuries, a cleaner environment, more freedom and greater mobility. Only by working together can industry and the government ensure this revolution, and a self-driving future becomes a reality. Leadership is about setting a goal and clearing every obstacle to get there. If we agree on the goal, then Congress can update laws, exert oversight and help save lives, avoid injuries, reduce congestion and empower Americans.

Mr. BURGESS. The chair thanks the gentleman. And I thank all of our witnesses for their testimony today.

We will move into the question portion of the hearing and I actually would like to go to the gentleman from Kentucky first for his questions.

Mr. GUTHRIE. Thank you, Mr. Chairman. I appreciate you yielding.

First, Mr. Bainwol, how soon can we expect self-driving cars on the road and what are the main obstacles facing the automakers to get self-driving cars on the road faster?

Mr. BAINWOL. So, that is the big question. I have hear Dr. Rosekind respond and he ducked it pretty well and I will try not to.

So, most of our members have talked about self-driving cars being on the road in the 2020, 2021 time frame but that is not going to be anytime anyplace. That is going to be either geofenced or a certain set of conditions.

So, it is around the corner. But as I indicated in my prepared testimony, the deployment is going to take two generations. Moody's says 2055 before it is ubiquitous, 2045, 30 years from now, before it is the majority of the fleet. And the fleet mix issue is absolutely huge.

Mr. GUTHRIE. OK, thank you.

And Ms. Wilson, what is the difference between the driver assisted systems and active safety features that we are seeing on the market today in self-driving cars? And how are those systems preparing consumers for the future of fully automated cars?

Ms. WILSON. So, the driver assisted systems that you see right now can take over a function. For instance, AEB will take over a function but doesn't take over control of the vehicle. So, as you look what the SAE and what is set as the stages of automation, this is, I won't way the first stage, but it is the first stages of automation.

And I think what you are seeing when they discuss this both at NHTSA and SAE is they know that this is going to be a gradual piece. I mean as Gary was mentioning, Mr. Shapiro was mentioning about the aftermarket, the aftermarket can provide valuable warning devices to a consumer. So, if you have a car that is a little older, it can warn you, maybe not take over control of the vehicle, but warn you of a safety hazards and things like that.

So, again, those levels of automation are very important and we will see this gradually increase over years.

Mr. GUTHRIE. Thanks. I was just visiting my daughter in Chicago and I have a little older car. And I had to, which we don't do in Kentucky too often, parallel park. And you are not in practice and then I was with a friend of mine who has a substantially nicer, more expensive car than I have that actually could guide him right in, parallel park. It got him right in. So, it was interesting.

Ms. WILSON. We have some members who would love to show you that technology.

Mr. GUTHRIE. Well, I learned that I need it because we don't do that. I don't do that actually hardly ever back home.

So, Mr. Shapiro, what kind of disruption do you think self-driving cars will have on jobs? I know that you have talked about it is going to increase economic opportunity but just anytime there is,

I guess you could say the tractor cost jobs. That is what the Grapes of Wrath is really about. But it also created productivity but it did displace people.

So, how should we be preparing for that disruption?

Mr. SHAPIRO. It is a great question. I think it will have an equivalent of what the car did to those who rode horses, basically. It will be big because you are not only talking about professional drivers, you are talking about also collision repair people, aftermarket parts people, collision repair shops, the insurance industry will dramatically be affected. But what consumers will get in return, obviously, is lower insurance prices and they will have fewer fatalities. The hospital rooms, there will be less people in emergency rooms. It will affect emergency room doctors. And it will be very disruptive. There is no question about that. And that is a very critical issue and I think we have to start talking about it.

So, what happens in any segment of society? What happened to telephone operators? What happened to travel agents? What happened to all these things as we go to new jobs? And that is what this election may have been about. And I think we have an obligation, those in business and those in government to figure it out. And part of figuring it out is what are the jobs for the next century.

Now, we advocate, look, already today there is about 60,000 or 70,000 truck driver jobs that are open. They are not even being filled. So, we need truck drivers but that will shift over time. We have an aging population. We need people to take care of them. We don't have enough people.

We need programmers. We need STEM graduates. We need people that have technical skills. We need in this country to get people to get community college training and raise that so that not everyone has to go to a college.

I could spend a lot of time talking about the future of jobs and we will be talking about it next year in 2017 at CTA because it is important and I think we have to focus on it as a country and as a society.

Mr. GUTHRIE. My family is in the automotive supply business. So, we deal with some of the companies that are trying to develop the technology. And I didn't have a chance to go to the demonstration earlier but they say, the engineers are talking about the biggest problem is that if everybody follows the rules, this works but if you get into those situations where it is traffic and you have got to like force yourself into, merge. Like you know you waive to somebody and they back up and they let you in, he said those are the things that they haven't—it really is driver using like the way—you know how we all do that. Yes, can you come on in. And they said that is where they are really struggling to try to figure out how to get around those kind of situations.

Mr. SHAPIRO. That is an addressable situation, increasingly addressable, especially with aftermarket products. It is a matter of what algorithms you create and how your car responds to other people who may not be following the rules. It is a solvable problem but it takes everyone getting together to talk about how to solve it.

Mr. BURGESS. The gentleman yields back. The chair thanks the gentleman. The chair recognizes the gentlelady from Illinois, Ms. Schakowsky, 5 minutes for your questions, please.

Ms. SCHAKOWSKY. Thank you, Mr. Chairman.

Ms. MacCleery, I was interested in your testimony. You said that in the late '70s crash safety was considered at 50 miles an hour and today the minimum safety standard for frontal impact you said is 30 miles an hour with a 35 mile an hour test for new car assessment program. How did that happen and why?

Ms. MACCLEERY. Yes, there was a challenge made to the engineering community by the National Highway Traffic Safety Administration under President Carter. And he went out and he said basically let the engineers solve this problem. So, they designed the research safety vehicle and it had a number of really interesting innovations, including a kind of plastic styrofoam that was inside the vehicle's structure so that it would be very crash absorbing and it made the vehicle crash safe at 50 miles an hour.

And really, that is a high water mark that has not——

Ms. SCHAKOWSKY. Well, how did it get reduced? Why would it get reduced as the standard?

Ms. MACCLEERY. Well, it wasn't the standard. It was a test vehicle——

Ms. SCHAKOWSKY. Right.

Ms. MACCLEERY [continuing]. A prototype——

Ms. SCHAKOWSKY. Right.

Ms. MACCLEERY [continuing]. That demonstrated what would be possible from a vehicle design and engineering perspective.

Ms. SCHAKOWSKY. And did that ever get implemented in the actual manufacturing?

Ms. MACCLEERY. No.

Ms. SCHAKOWSKY. No. Oh, OK.

Ms. MACCLEERY. The vehicles were mostly destroyed under the Reagan administration. There were two that were recently discovered and were brought to NHTSA for study.

Ms. SCHAKOWSKY. Let me ask this, then. Does a 30 or 35 mile an hour standard make sense today that that is what we test for? Should we be looking at something more significant?

Ms. MACCLEERY. Yes, there are a lot of complexities to raising occupant safety standards, including dealing with smaller statured individuals and how aggressive air bags would be. So, you have to factor in the whole vehicle approach. But if you can build the crash worthiness into the vehicle structure, the way that air bags do, it helps all occupants. And that is what the design of the research safety vehicle demonstrated was possible.

Ms. SCHAKOWSKY. Now, clearly, we are talking about these new technologies and the cars driving themselves but you also mentioned that consumers would be far more likely to entrust their lives to crash safe vehicles and these improvements should be viewed as a necessary corollary to automated crash avoidance systems. Are we doing enough in that regard or has our focus shifted to the automobiles themselves being able to take care of it? Should we be continuing to emphasize and are we doing that enough, the crash safety methods?

Ms. MACCLEERY. I don't think we are. NHTSA has a number of standards that are badly out of date and have not come pace with where vehicles are performing today. And we should be upgrading the safety standards. As we have heard, a mixed fleet is what we are going to be dealing with for the foreseeable future.

Ms. SCHAKOWSKY. Right.

Ms. MACCLEERY. And so, saving lives in the interim is really a priority.

Ms. SCHAKOWSKY. OK. You know, Mr. Shapiro, you were talking about the Consumer Electronics Show that you have every year. And I am just wondering. There is both the convergence of driver reliance on semi-autonomous features but also the increased use of smart phones, and apps, and infotainment options in cars. And I am just wondering if there is some conflict here for distraction of drivers. At the same time, we are talking about more autonomy for the cars themselves, we are also providing more distractions, especially in this transition period.

Is there a conflict there? And how do we resolve that?

Mr. SHAPIRO. Well, we resolve anything like that by getting to self-driving cars with more and more features towards self-drive as soon as possible because they do save lives.

I don't think you are going to be able to change the fact that—why did we go up from 30,000 to 35,000 deaths last year? And we keep asking ourselves. Well, cheap gas, more miles clearly added but there are others. There are more distractions and it is not only using devices. It is that there is people drinking coffee. And people are tired. They fall asleep a lot. They drink a lot.

Ms. SCHAKOWSKY. Yes, but they always did that.

Mr. SHAPIRO. But they are still doing it and I think we are all more tired now for some reason.

Ms. SCHAKOWSKY. Yes, well.

Mr. SHAPIRO. But the point is that it is going up. It is a bad trend. And the way to get out of it is, obviously, to do public education through strong laws on distracted driving but we have got to get to driverless cars and active collision avoidance and even, obviously, past collision.

And we are getting there quickly. I already had an experience with an active collision avoidance where I was stopped hitting the car in front of me because the car took over. I think it is great. I think every American should have that and we should have it as soon as possible and we should also try to get it through the aftermarket. We can't wait 30 years. That is about a million lives we will lose.

Ms. SCHAKOWSKY. OK, I am just wondering, if I could, Mr. Chairman, ask Ms. MacCleery to comment on that.

Ms. MACCLEERY. Well, we see an enormous variance among the effectiveness and consumer-facing features of various current performance technology. Some of them don't work under certain weather conditions. Others of them may not be to the consumer's liking in terms of how they are doing alerts.

For example, in the Lane Assist technologies, we have done testing where you are trying to swerve to avoid a bicyclist or a pedestrian and the vehicle tries to correct that by pulling the steering wheel back out of your hand and keeping with the lane. That could,

actually, cause a collision and it is unnerving from a driver's perspective to be steering into the object that you are trying to avoid.

And so these technologies are in development. And some are better than others. They are not uniform. And that is why we think having the data sharing piece is so important because once the public and regulators can get access to the data about which systems work better than others, then you can see how to set the direction for the future of these technologies and which ones are really proving beneficial.

Ms. SCHAKOWSKY. Thank you.

If I could just ask Mr. Shapiro while all these technologies are developing, I hope you will develop one for hot cars notification of people who may leave a child in the back seat. We have all these bells and whistles now in our cars. Children die because they are left in those cars.

Mr. SHAPIRO. There is something and I will follow-up with you and tell you what it is.

Ms. SCHAKOWSKY. Thank you.

Mr. SHAPIRO. And I might add to that example, I keep thinking of the fact that every one of us in this room has probably seen somebody and we have swerved away into a lane we didn't even know someone was there. And the technology that we are going to will avoid that risk we are taking, all of us are taking in one on.

Ms. SCHAKOWSKY. Thanks all of you.

Mr. BURGESS. The chair thanks the gentlelady. The chair recognizes the gentleman from Oklahoma, Mr. Mullin, for 5 minutes for questions, please.

Mr. MULLIN. Thank you, Mr. Chairman. Thank you to the panel for being here.

Ms. MacCleery, I couldn't agree more that it does unnerve you a little bit when you are switching lanes, when you are in traffic and you have got to get over and you have to steer into it, which is why I absolutely cannot stand it on my wife's vehicle. But I get the need, too. Look, it is about safety, to Mister—is it Shapiro? I am so sorry. I get the safety part of it but I am from a very rural part of the country. In fact, just to get to my house, you have got to go four miles down a country road and that is off of a two-lane road that is the nearest four-lane highway is I don't know. It is a long way away. And we pull a lot of trailers. There are trailers behind a truck. If you are with me on a weekend, I have probably got a trailer behind me.

How does this technology affect that? There are so many variances that go into place. I heard you talking about truck drivers. The way the trailer is handled behind a vehicle, the weight, it would depend on how they are loaded. It would depend on the bumper pull of if it has got a gooseneck on it. It would depend on if you are running cattle or if it is an RV. I mean it all changes and it all changes to feel the vehicle.

How does an automated vehicle correct that and change that, not to mention you are going down dirt roads and country roads?

Mr. SHAPIRO. Those are great points and those are the kinds of things which will be plugged into equations so the car will know what it is pulling. It will know its weights. It will know the reac-

tion. It will know what kind of road it is on. It will know if you have been drinking or not, too, which is the point.

Mr. MULLIN. Drinking what?

Mr. SHAPIRO. Well, the important part is that we have so many accidents today and so many people, there is drunk driving this obviously will have a big impact on and there is disabled Americans and older Americans that are waiting for this to happen.

Mr. MULLIN. No, I agree. Look, in my district, 12 percent of my population is over 70. To go get groceries, it is typically a 30-minute drive because it is 15 there and 15 back. That is on average. That is in my district, average.

Mr. SHAPIRO. Well, we can also talk about drones to get some service to those people as well.

Mr. MULLIN. They would be shot down if they flew around our place.

Mr. SHAPIRO. I am not winning with you, am I?

Mr. MULLIN. No.

Mr. SHAPIRO. But the bottom line is is we will resolve these problems. And the way to resolve the problems is to identify them and discuss them and come to a consensus.

And what we have now with computer technology and machine learning technology, it will learn as it goes along. There will be deep learning of the situation but it won't be perfect but it will be great.

Mr. MULLIN. But the more of it comes—and I get that. I am not against technology. Look, our company, we are always investing in technology. It is great. It is wonderful but it can become a distraction. You can't depend on a computer to understand when a horse falls in your trailer. You can't. You can't feel that. You are talking about the safety of the animal, at that point. And if you are not paying attention to it, it goes away.

And I understand technology but I am not so sure that it is going to be a fix-all. In major metropolitan areas, OK, I get that. But if you put a mandate out there on it, you are going to take away the freedoms. You are going to take away the ability for the driver. You are going to take away the feel of the vehicle.

My kids, my oldest one is 12 years old and we are literally already teaching him how to drive on a farm because in Oklahoma, at 14 you can get your driver's license to drive on a farm. And you are going to be driving a trailer. You have got to feel that. You have got to know what it feels like. And you can't, you are not going to get that through vehicles. I am going to have a hard time believing that a machine is going to be safer than me when I have got everything paying attention to it.

Granted if I am drinking, which I don't, but I am just saying I get that. I understand that. But I am not so sure this is going to be perfect and I don't want to rush and put it out there. I think there is going to be areas to where it would be great.

Mr. SHAPIRO. Well, you did use the word mandate and that is not a word I have used. I would imagine in a many of the vehicle manufacturers, especially those aimed at the rural area would have a switch that would allow you to turn it on and turn it off, or give you a warning if you are about to hit a tree, and maybe only take over if you are hitting a tree or a deer, or something like that.

Mr. MULLIN. That is what a brush guard is all about because those things jump in front of you.

Mr. SHAPIRO. We are evolving on this. Pardon me?

Mr. MULLIN. I can't predict when a deer jumps in front me. That is what a big brush guard is for. You just hit them and go one, I guess. I don't know.

Mr. SHAPIRO. Well, maybe the car can. Maybe the car can. And that is the advantage of this.

So, I think we have to let it play out but set the goals. And the goals are reducing human injury and death, the 94 percent of car accidents that are caused by human error.

Mr. MULLIN. No, I get that. Look, I have got five kids coming up, too. I mean my oldest one, like I said, is 12 and I know how bad of a driver I was when I was 16. And we can all say that.

And so I want to be as safe as possible. I don't want anybody to lose their child. I don't want anybody to have to go through that but I want to make sure we are cautious moving forward.

So, thank you to the panel for being here. I appreciate you.

Mr. BURGESS. The gentleman yields back. The chair thanks the gentleman.

The chair would observe that we have been joined by the Ranking Member of the full committee, Mr. Pallone, and I will be happy to go to him next to him for questions, 5 minutes, please.

Mr. PALLONE. Thank you, Mr. Chairman.

Both the tech industry and the automotive industry have been working towards fully automated vehicles for years now but many consumers remain unaware of the technology and its potential to decrease fatalities, improve mobility for seniors and the disabled, and improve daily life for Americans.

So, I wanted to ask Ms. MacCleery, there has been a lot of attention paid in Congress and in the media on autonomous cars. We have heard claims that these cars will be available for purchase soon but we have also heard that fully autonomous cars are decades away. What is the realistic time line for adoption and is this something consumers should be paying attention to now or is this decades away?

Ms. MACCLEERY. So, we think that it is not probably decades away but it is really an unknown in terms of the exact time line when these vehicles could come on the road. And what we are most concerned about is that vehicles currently touted as self-driving are actually not there yet. And so that that is misleading to consumers who actually need to be able, and poised, and paying attention to take over the wheel at a moment's notice. We know that human beings have a hard time coming in and out of paying attention to situations. And so we think that that kind of overselling of the technology represents a particular hazard.

Mr. PALLONE. All right, thanks.

It is my understanding that because of the interest in ensuring that components of autonomous vehicles are safe from cyber intrusion, some have expressed concern about retrofitting exiting vehicles with the technology.

So, let me ask you, does aftermarket autonomous technology present cybersecurity risks and are there unique safety risks associated with aftermarket autonomous technology?

And I guess I will ask the third question. Is there a path forward for aftermarket autonomous technology or will consumers eventually be required to purchase a new vehicle to get the benefits?

I will throw those all out. You can answer them together.

Ms. MACCLEERY. On the cybersecurity question, I think we are very concerned. What we saw with the distributed denial of service attack just a few weeks ago was that there are lots of back doors and lots of products. And obviously, the prospect of having some sort of coordinated attack that would take over the wheel from American drivers is very concerning.

We have a guidance that the National Highway Traffic Safety Administration just issued. We think that is a good first step but it really needs to be pushed forward quite aggressively so that we all have a better view of what are the vulnerabilities and how to fix them, both with current vehicles and the current technologies that are already on the road, as well as future and anticipated technologies in vehicles.

In terms of aftermarket solutions, I think some of the same security concerns would apply. And so you would want them to be compliant with whatever that new standard on cybersecurity is that gets established.

As to your third question, in terms of the future of autonomous vehicles and aftermarket solutions, we haven't really comprehensively evaluated these technologies at Consumer Reports. It is something that we are looking at. And so we really don't have a view yet, driver reviews based on evidence in the testing and we would need to conduct comprehensive testing of some of the aftermarket opportunities.

Mr. PALLONE. I had a third question but did you want to say something quickly?

Mr. SHAPIRO. Yes, Administrator Rosekind testified on that very point and he said that the same risks you have with cars you would have with aftermarket as well. There is no additional risk that he is aware of.

But I would say that even if there is an additional risk, I think you have to weigh that against the lives that will be saved. So, if we wait an additional 15 years so that the entire fleet turns over, as opposed to starting putting the products in in the next few years, then we have lost 15 years' worth of lives at the rate of up to 30,000 a year.

Mr. PALLONE. All right, thanks. Oh, I am sorry.

Ms. WILSON. I was just wondering if I could. I represent component manufacturers, including aftermarket manufacturers. Our members are working very closely with the vehicle manufacturers right now on what is called a secure vehicle interface to try to look at things like this to see how we can provide this and provide the cybersecurity. We are hoping that an industry standard can be reached.

And an SAE Committee has just recently been started and they are going to start to meet in December. So, we are very hopeful. There are a lot of challenges I think as the whole panel has indicated but the industry is really trying to work on this and get our arms around it.

Mr. PALLONE. All right, thanks. Let me get in a third question here.

Semi-autonomous vehicles, which utilize technology such as automatic lane-keeping, speed adjustment, and automatic parallel parking are already making their way to market. So the question, again, to Ms. MacCleery, there is likely to be a lag time between semi-autonomous vehicles and fully autonomous vehicles hitting the market, in addition to traditional driver-operated vehicles remaining on the road for some time. We can expect that, at some point, fully autonomous, semi-autonomous, and driver-operated cars will all be on public roads at the same time. So, can they exist safely on the road together and why?

Ms. MACCLEERY. I think that is the heart of the question. We do have issues with social signaling, the kind of thing that was discussed a few minutes ago, with regard to drivers indicating to one another when they are going to enter a new lane and that sort of thing and there is real questions about whether fully autonomous vehicles can actually participate in that kind of social exchange on the roads and what happens to the technology if it can't read those signals.

You know there is also issues with a mixed fleet of the unpredictable and of variances in the technology in terms of how well the various safety performance technologies do for consumers and how much safety benefit they provide.

We are, obviously, very keen to see innovations that enhance safety. We have been huge fans of some of those technologies, including advanced emergency braking and have tested a variety of those systems and think that they do provide a real safety benefit, alongside other systems, like electronic stability control that have already been made part of regulations.

So, we are eager for the National Highway Traffic Safety Administration to do sufficient data collection. They can actually compare the benefits of these systems and look at them together.

Mr. PALLONE. All right, thank you all. Thank you, Mr. Chairman.

Mr. BURGESS. The gentleman yields back. The chair thanks the gentleman.

I do want to point out to the gentleman from New Jersey that I did not take my time for questions and allowed the members of the subcommittee to go first. So, now I am consuming 5 minutes. I didn't want you to think that I was giving myself an additional time.

But I do want to thank all of you. This has been a fascinating discussion. Now, tomorrow, we are going to have another joint subcommittee hearing with the telecom subcommittee on this very issue of the denial of service attacks, not so much as affect the automotive industry but it does raise a rather odd specter for being a cyber carjacking and someone actually being able to take over your vehicle. I don't know if you could actually access the Bitcoins from the dashboard or not but it is an interesting problem that when you think about it for the future and the ability to have security of the cybersecurity necessary in these vehicles is going to be critical.

And I assume right down the line that you all are focused on that with both your manufacturing, aftermarket, and the consumer electronics. Is that a fair statement?

Mr. BAINWOL. Absolutely. As we have talked about before in the subcommittee, the manufacturers have established an ISAC that is up and running. We have issued best practices. And both the establishment of the ISAC and the best practices have been well-recognized by NHTSA as very positive steps forward.

Mr. BURGESS. Mr. Steudle.

Mr. STEUDLE. Yes, actually with the State of Michigan we have opened up a cybersecurity range and we are working with the University of Michigan on that exact topic.

Ms. MACCLEERY. We are very concerned about this. We have been looking at the issues in terms of the vulnerabilities. There was a well-known July 2015 hack of a Jeep, and Tesla and Mitsubishi vehicles have also recently been hacked. There was a news reporter who also allowed his vehicle to be hacked and lost control. And we are incredibly concerned that any vehicle connected to the internet is potentially vulnerable and that this is a sort of a late-arriving issue in terms of vehicle design that needs to be addressed forthwith.

Ms. WILSON. So, our Tier 1 original equipment suppliers, many of them are in the Auto ISAC with their vehicle manufacturer customers. And in addition, on the commercial space, we are working with NHTSA right now and the team on the Auto ISAC to come up with a commercial vehicle model, something similar like that.

And then, again, as we talked about before with the aftermarket, the aftermarket is trying to work on some industry solutions for some of these concerns. So, yes, sir, we are very involved in this.

Mr. BURGESS. Very well. Mr. Shapiro?

Mr. SHAPIRO. In addition to the Auto ISAC effort and what NHTSA has done with best practices, we look at this more holistically as part of the internet of things because that is what this really is. And we have an effort ongoing internet of things to focus on and online self-assessment tools so that companies could figure out if they are using best practices and doing things correctly.

Mr. BURGESS. Very good. And Mr. Shapiro, you referenced and Ms. Schakowsky had a question about addressing a child left in a hot car. And it does seem that automobiles are getting so darn smart that they ought to be able to tell if there is a life form contained within and if the internal temperature is incompatible with that life form continuing and somehow let someone know—I live in a part of the country where it does extremely warm in the summertime and then these types of accidents, unfortunately, they are prominent when they do occur because it is a very prominent tragedy and if there is a way to prevent that, I would just add those children who are lost in a hot car or even a pet who is lost in a hot car as to those lives that could be saved that you alluded to at the beginning of your discussion.

I was talking to Dr. Rosekind before he left and I remember when my children became of driving age. That was a long time ago, but like any cheap dad, I was thinking well, we will get them a whatever kind of heap I can go find in the aftermarket or the used car market. And I think it was another physician who pointed out

to me that you know the kids just starting to drive is the one who needs to the antilock brakes. You have got them on your Thunderbird but you don't really need it because you are not going to be in the same situation.

So, it is a paradigm shift for parents to think in terms of putting that lane departure warning or automatic braking, putting their first car that their child drives ought to have the protection of those things, in my opinion. And my thinking has shifted on that over the years. But those are the lives that I think could be saved.

We had a tragic accident back in my hometown. Two mothers and two daughters were in opposite cars or cars driving in opposite directions and there was a distracted driving situation, it was assumed, but all four died. And this is in a town that already has a prohibition on texting while driving.

So, the law is already there. We are looking now, the city is looking at is there some way we can beef up the law. Is there some way that enforcement can be increased? But it is a terrible, terrible problem and I like the idea of technology being able to prevent some of those accidents. So, I am very much in favor of what you are discussing.

In your written testimony, you do have the paragraph of most concern is a proposal to grant NHTSA preapproval authority for new vehicles. That concerned me also when I read that, that it would be a major increase in authority for NHTSA by allowing NHTSA to approve every new model in every model year before it comes to market. That was a pretty startling statement that you made there but I assume that is a concern that you have from the consumer electronics area.

Mr. SHAPIRO. Yes. So first of all, I do want to respond to the other things you said as well.

The tragedy of the kid or the pet in the car, we should be able to solve that. I mean it is a tragedy and it is not like driving which sometimes things are unavoidable. We should be able to use technology to avoid that today. I know I have heard something about this in terms of technology that someone has proposed. I just don't know how mature or realistic it is but I will provide that to the committee.

In terms of the distracted driving, what more you could do, I was just driving in Canada recently and there were signs everywhere and it made me really think about it. I think there are some things other countries are doing we should be looking at as well.

But ultimately, we have to get driverless cars and collision avoidance quickly. And your point about kids being the first is a great one, something I had not considered until you said it but you are absolutely right. I guess we have to convince parents they have to give their kids new cars. That is an official policy.

Mr. BURGESS. I am sure the Automotive Alliance will.

Mr. BAINWOL. We like that idea.

Mr. BURGESS. And then did you have a comment about the preapproval?

Mr. SHAPIRO. Oh, yes, I am sorry. That was really your final question.

Yes, so NHTSA has done, their attitude, their work, their everything has been fantastic. They have the right attitude of pro-inno-

vation, pro everything. However, there is a tradeoff between established car companies and companies that want to enter the marketplace. And the car companies also, they like to change things. They like to change it up. Everyone likes to have something new. We are innovators. We like to progress. And if you have to have everything preapproved, which NHTSA was suggesting, that would really slow things down, especially in the footnote that referred to the airplane model, which takes several years for approvals. And that was pretty terrifying for those of us with this rapid turnaround, rapid changes in technology. And you don't want to deny consumers new benefits.

So, I don't think it is what NHTSA wants to do. I think they have done a fantastic thing it is just we want some areas clarified because of the ramifications and the barriers to entry, the barriers to innovation and new models.

Mr. BURGESS. I do want to mention that Tesla, BMW, and Audi had vehicles available for subcommittee members to look at this morning out on the street. Time constraints wouldn't permit me to look at all of them but I was struck in one of the cars. I won't mention the name but the size of the screen in the middle of the console was bigger than my television at home. And we are talking about distracted driving. That car has to drive itself because you are going to be watching whatever video is going, the GPS, and everything else. Really it was a startling technological development but I am sure it can be overwhelming for people who get behind the wheel, particularly a youngster who is not used to driving.

So, anyway, do you have a follow-up question, Mr. Ranking Member?

Well, thank you to our second panel. Seeing that there are no further members wishing to ask questions of this panel, I would thank all our witnesses for being here today.

Before we conclude, I would like to include the following documents to be submitted for the record by unanimous consent: a letter from the Property Casualty Insurers Association of America, a letter from the Global Automakers.

[The information appears at the conclusion of the hearing.]

Mr. BURGESS. Pursuant to committee rules, I remind members they have 10 business days to submit additional questions for the record. I ask the witnesses to submit their response within 10 days upon receipt of those questions.

And we have one more letter from OTA to submit for by unanimous consent. Without objection, so ordered.

[The information appears at the conclusion of the hearing.]

Mr. BURGESS. We will insert it both today and tomorrow. How is that?

Without objection, the subcommittee is adjourned. Thank you all.

[Whereupon, at 12:47 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. FRED UPTON

Today our Disrupter Series continues as we examine self-driving cars. Keeping Americans safe on the road has been a top priority for the committee. Being from the auto state, I know just how dedicated the auto industry and Michigan's premier

research institutions are to developing a roadway system that is accident and defect free.

This work is critical—especially when considering that traffic fatalities are on the rise for the first time in more than a decade. In Michigan, there were nearly 1,000 fatalities last year alone. And I am told that, nationwide, the fatality numbers are up again in the first half of this year.

Today's hearing on self-driving cars gives us an opportunity to examine how the innovation in Michigan and across the country can literally save lives.

The question is: how do we get there? How do we make sure that the software, maps, and sensors powering driverless cars are adequately researched and tested to guarantee that they're ready for deployment and safe for American drivers? How do we ensure that policymakers, at both the state and federal level, are prepared for and understand the capabilities of vehicle automation technologies? The most important thing is to make sure that government, at any level, doesn't hinder the development of this potentially game changing technology.

NHTSA's recently-released policy guidance was a constructive first step in starting this conversation but also gives way to new questions. Back home in Michigan, an effort has already begun to address these issues. Michigan's proposed American Center for Mobility at Willow Run has the opportunity to offer policymakers and auto manufacturers across the nation, and around the world, a one-stop-shop for testing and certification for connected and automated vehicle technologies.

Using over 330 acres of land, this proposed test facility accommodates a number of roadway and driving conditions that will be critical for development and deployment of autonomous car technology. With close proximity to Michigan's vehicle-to-infrastructure corridor, University of Michigan's Mcity testing facility, and home to many of our nation's automakers, this represents a prime location for folks to test advanced automotive technologies and prepare for the future of vehicle transportation.

As I have often said before: auto safety is a matter of life and death. Because of this technology's life-saving potential, we cannot let the government get this wrong.

I look forward to a valuable discussion on the positive and transformative impact that self-driving cars could have on the safety of the driving public.

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

Thank you, Chairman Burgess.

It's easy to understand why self-driving cars have captivated the public, the media, and, of course, Congress. With 94 percent of car crashes being caused by drunk or distracted driving or other human errors, the future of fully automated driving is bursting with possibilities.

Experts have said that if human error is out of the picture, collision rates will fall significantly from the more than 38,000 Americans killed in car crashes last year.

Self-driving cars have the potential to improve lives as well as save them. Autonomous vehicles could give seniors and people with disabilities independence and mobility, and remove barriers to employment and social interaction. They also could possibly reduce traffic in our cities and revolutionize public transportation.

Autonomous vehicles have great potential, but they must be deployed responsibly.

Robust cybersecurity is essential. As with all new technologies, we must demand "security by design," where security is not an afterthought but is built into the product from day one. As we saw just a few weeks ago, attacks on our digital infrastructure are not hypothetical. And I look forward to the hearing tomorrow when we review those attacks in this Committee. But unlike that attack and some other cyber breaches, attacks on computer-driven and connected cars are a threat to human life.

We also need to see "privacy by design," with consumer privacy baked in from the start. Autonomous vehicles function by collecting and processing vast amounts of information from their surroundings. For example, most collect vehicle location data and many operate using cameras and sensors that can "see" inside and outside the vehicle. Such data should be property protected and only used for operation of the vehicle and not shared.

Finally, safety must be the highest priority as autonomous vehicles have already begun to share our streets. The American public must know that these cars are safe before they are widely deployed on public streets. The companies manufacturing these vehicles cannot just say "trust us."

The challenge is twofold. First, we must ensure safety during the decades of transition time when autonomous cars share the road with human drivers. The interaction between humans and computerized vehicles present unique challenges. Sec-

ond, the autonomous vehicles must be ready to deal with all foreseen and unforeseen scenarios before they are permitted to operate without a human driver in the driver's seat. These scenarios include being prepared for wet, snow-covered pavement to confronting a policeman who is using hand signals to redirect traffic. Today's hearing will focus on fully autonomous cars, but I will note that exciting semi-autonomous technologies are already in the marketplace, such as automatic braking, which I am optimistic will become standard on all makes and models sooner than is currently promised.

I am hopeful that during today's hearing we will explore the great potential of fully autonomous vehicles but also appreciate that their benefits could be decades away from being realized. Whatever the timeline, I am confident that America's greatest minds will be able to meet the technological challenges ahead while prioritizing safety, privacy, and security. But together we also must address the challenge of any job losses that result from automation, including that of autonomous cars and trucks.

I would like to end by paying tribute to Clarence Ditlow, Executive Director of the Center for Auto Safety, who passed away late last week. Clarence was a tireless vehicle safety advocate who was known not just for holding auto manufacturers accountable, but also holding NHTSA and Congress accountable. He testified numerous times before Congress, and throughout his decades of auto safety advocacy, he worked on everything from the Pinto explosions and Firestone tires to most recently ignition switches and defective airbags. Cars, SUVs, and trucks are safer today because of Clarence, and he will be missed by the entire driving community.

I yield back.

STATEMENT OF PROPERTY CASUALTY INSURERS ASSOCIATION OF AMERICA
Subcommittee on Commerce, Manufacturing, and Trade,
House Committee on Energy and Commerce
Hearing on

"Disrupter Series: Self-Driving Cars."

There is a fundamental mismatch between the public perceptions that auto accidents and insurance costs are decreasing with the stark reality that our roads are becoming increasingly dangerous and rising costs. According to the National Highway Transportation Safety Administration (NHTSA), 17,775 people died on our nation's road in the first half of 2016. Traffic deaths are increasing at the fastest rate in 50 years, with a 10.4% increase the first six months of this year. Even adjusted for the increase in vehicle miles traveled (VMT), the fatality rate increased 6.6 percent to 1.12 per 100 million VMT. Non-fatal injuries are on the rise as well, increasing 28 percent since 2009 according to the National Safety Council. Someday in the future self-driving cars may reduce the number of accidents and deaths. However, the potential of automated vehicle technology stands in sharp contrast to what is happening on our roads today.

The Property Casualty Insurers Association of America (PCI) is composed of nearly 1,000 member companies, representing the broadest cross section of insurers of any national trade association. PCI members write $202 billion in annual premium, 35 percent of the nation's property casualty insurance. That figure included over $97 billion, or 42 percent of the auto insurance premium written in the United States. PCI's analysis has found that since 2013, auto claims frequency has increased nearly 5 percent, increasing the overall cost of claims by more than 18 percent. PCI's has analyzed the recent increase in auto insurance claim frequency and found strong correlations with traffic congestion and distracted driving, weaker correlations from increasing populations of novice and older drivers, and some correlation with liberalized marijuana laws.

While it is important to prepare for the automated vehicle of the future, we urge policymakers to continue to focus on the auto safety challenges that face us today such as distracted and impaired driving. H.R. 22, the FAST Act, provides for continuing efforts to increase public awareness and improving enforcement as well as establishing an enforceable impairment standard for drivers under the influence of marijuana are critically important to reducing accidents, injuries and deaths on our nation's roads. The importance of addressing these issues was also the subject of a bipartisan letter from 23 members of congress to Transportation Secretary Foxx urging prompt implementation of these provisions of the FAST Act.

NHTSA recently unveiled its "Federal Automated Vehicle Policy", intended to provide guidance for states on the testing and deployment of highly automated vehicles (HAV's). While mentions of insurance are few, the new policy does raise issues that are important to the automobile insurance market as it seeks to adapt and develop new products to meet consumer's needs.

Recognition of State Regulation of Insurance and Liability Issues

NHTSA's policy identifies as federal responsibilities, setting and enforcing safety standards for motor vehicles, recalls, promote public awareness and providing guidance for the states. NHTSA's policy also recognizes that it is the state's role to license drivers and vehicles, enforce traffic laws and regulate motor vehicle insurance, tort and criminal liability issues as they pertain to automated vehicles. PCI shares the view that the states should continue to have primacy on motor vehicle insurance and liability issues as they do today, and we support NHTSA's recognition of that role.

NHTSA's policy also repeats the recommendation from its 2013 guidance that entities testing automated technology should provide proof of financial responsibility coverage of at least $5 million. PCI has not taken a position on this coverage requirement. But as highly automated vehicles (HAV's) are deployed for public, states will need to consider what, if any, changes need to be made to the states existing motor vehicle financial responsibility laws.

Data Collection and Access

As policymakers consider what data should be collected and retained by automated vehicles it is essential for providing customer service that whatever the rules provide for reasonable access to that for insurers for claims handling and underwriting purposes. In many auto accidents, apportionment of liability is likely to hinge upon whether or not a human driver or the vehicle itself was in control and what actions either the driver or the vehicle did or did not take immediately prior to the loss event. Access to data for insurers will speed claims handling and potentially avoid disputes that could delay compensation to accident victims. Access to historical anonymized data on the different automated vehicle systems will also be important to help insurers innovate and develop new insurance products as the nature of the risk changes.

Conclusion

Automated driving technology holds great promise for the future, and implementing clear policies on the federal and state roles in regulating automated vehicle technology and ensuring that insurers have access to vehicle data on reasonable terms to efficiently handle claims, develop products and underwriting methods are an essential first step toward that future. However, policymakers must not lose site of the auto safety issues that face us today. We look forward to working with policymakers at the federal and state level to reduce accidents on our roads today and in future.

Congress of the United States
Washington, DC 20515

May 18, 2016

The Honorable Anthony Foxx
Secretary
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Dear Secretary Foxx,

Auto accidents and road fatalities are on the rise in the United States. In January, the National Highway Traffic Safety Administration (NHTSA) reported that in the first nine months of 2015, fatalities increased by more than 9 percent over the same period in 2014. Statistics from the National Safety Council (NSC) paint an even bleaker picture. The 38,000 people who died on U.S. roads in 2015 represent the largest increase in highway fatalities in the last 50 years. And early last year, before the increase in fatalities, NHTSA's estimate of auto accident costs totaled $836 billion per year.

According to the NSC, there are a number of potential causes for this increase in accidents, including distracted driving on increasingly congested roads and a rise in drug impaired driving. These trends point to the need for the Department of Transportation (DOT) to promote awareness and provide leadership and guidance to the states on these auto safety issues.

Congress has already taken the first step with the passage of H.R. 22, The FAST Act, which contains important initiatives to address these issues. With your leadership and guidance, we can do more to help keep motorists and pedestrians safe. DOT can increase public awareness of these issues by implementing the "High Visibility Enforcement Program", intended to reduce alcohol and drug impaired driving and to increase seat belt usage. In addition, the Department's management of "National Priority Safety Program" will be critical in helping to reduce highway deaths and injuries by allocating funds among states that reduce impaired driving, distracted driving and deaths and injuries among unrestrained vehicle occupants.

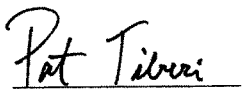
The FAST Act also directs DOT to study the feasibility of establishing an impairment standard for drivers under the influence of marijuana, and develop recommendations on how to implement such a standard.

Recent trends indicate the need for urgent action on these and other auto safety initiatives. On behalf of our constituents, we urge DOT to promptly implement the "High Visibility Enforcement Program" and "National Priority Safety Programs" and expedite the completion of the marijuana impairment study to provide critical guidance to combat marijuana impaired driving.

Sincerely,

Rodney Davis
Member of Congress

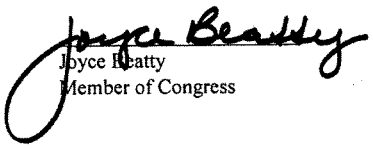
Daniel Lipinski
Member of Congress



Patrick Tiberi
Member of Congress

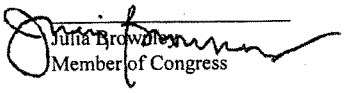
Brad Sherman
Member of Congress

Steve Stivers
Member of Congress

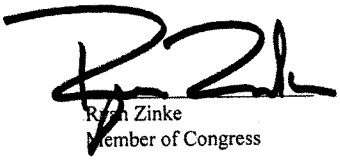


Joyce Beatty
Member of Congress

Mimi Walters
Member of Congress



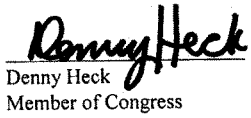
Julia Brownley
Member of Congress



Ryan Zinke
Member of Congress

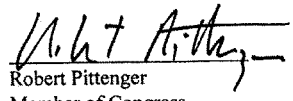
Judy Chu
Member of Congress

Mike Bishop
Member of Congress



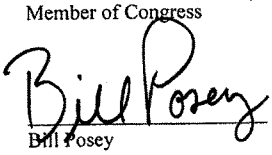
Denny Heck
Member of Congress

Peter King
Member of Congress

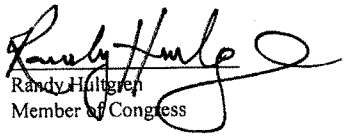


Robert Pittenger
Member of Congress

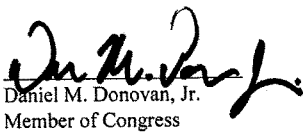
Robert J. Dold
Member of Congress



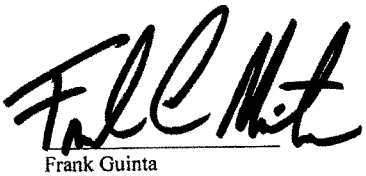
Bill Posey
Member of Congress



Randy Hultgren
Member of Congress

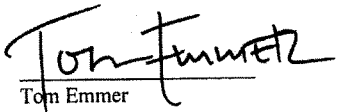


Daniel M. Donovan, Jr.
Member of Congress

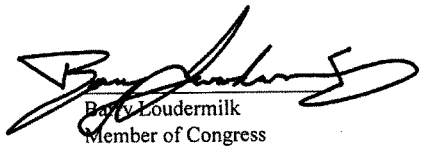


Frank Guinta
Member of Congress

Steve Israel
Member of Congress



Tom Emmer
Member of Congress



Barry Loudermilk
Member of Congress

Tom MacArthur
Member of Congress

GlobalAutomakers

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Maserati ◦ McLaren ◦ Nissan ◦ Subaru ◦ Suzuki ◦ Toyota

Statement for the Record of John Bozzella
President and CEO, Association of Global Automakers, before the
House Committee on Energy and Commerce
Subcommittee on Commerce, Manufacturing and Trade
Disrupter Series: Self-Driving Cars

November 15, 2016

On behalf of the Association of Global Automakers ("Global Automakers"), I am pleased to provide the following statement for the record of the House Energy and Commerce Committee Subcommittee on Commerce, Manufacturing and Trade hearing entitled "Disrupter Series: Self-Driving Cars." Global Automakers represents international automobile manufacturers that design, build, and sell cars and light trucks in the United States. These companies have invested $52 billion in U.S.-based facilities, directly employ more than 100,000 Americans, and sell 47 percent of all new vehicles purchased annually in the country. Combined, our members operate more than 300 production, design, R&D, sales, finance and other facilities across the United States.

The automotive industry is in the midst of an unprecedented wave of technological innovation that is redefining how we think about transportation. Advancements in connected and automated vehicle technology promise to enhance mobility, help save lives, improve transportation efficiency, and reduce fuel consumption and associated emissions. Over the past several decades, our members have made tremendous strides in safety by improving vehicle crashworthiness; today, automakers are deploying crash avoidance technologies to help prevent crashes from occurring altogether. Our members are at the forefront of this innovation, as they have made, and continue to make, substantial investments in the research and development of automated vehicle systems and other advanced automotive technologies.

While we are indeed at the cusp of a transportation revolution, transformations are not inevitable or accidental. Public policy can either spur investment and innovation, or hinder them, depending on which policy choices are made. Effective public policy on connected and automated vehicles should have two components. First, it should be flexible and provide room for innovators to

develop, test and sell new technologies. Overly prescriptive and rigid regulation would slow and limit innovation. Second, manufacturers should be able to build vehicles and systems that can be sold in all fifty states. A patchwork of inconsistent laws and regulation would be unworkable.

Over the last several months, we have seen a number of positive steps from both government and industry that will help pave the way for a more connected and automated future. The National Highway Traffic Safety Administration (NHTSA) Federal Automated Vehicle Policy, released in September 2016, provides a policy framework that is more flexible and nimble than the formal rulemaking process, and recognizes that technology can advance more rapidly than regulation. Last month, NHTSA issued its *Cybersecurity Best Practices for Modern Vehicles* to complement the important efforts already underway within the Automotive Information Sharing and Analysis Center (Auto-ISAC) to develop industry-led best practices to enhance vehicle cybersecurity as systems become more electronic and connected. Issues of consumer privacy have also been addressed through the automakers' consumer privacy protection principles. These actions, by federal regulators and industry, help spur the development of live-saving technologies and ensure that the public has confidence in them.

We would like to focus our statement on NHTSA's Federal Automated Vehicle Policy, which is divided into four main sections. First, the *Vehicle Performance Guidance for Automated Vehicles* outlines recommended practices for the safe pre-deployment design, development and testing of highly automated vehicle systems prior to the sale or operation on public roads. The Guidance was designed to be flexible and dynamic; it is intended by NHTSA to highlight important areas that manufacturers should consider and address as they design and test their systems. The Guidance provides for a "*Safety Assessment Letter*", a voluntary tool by which developers would communicate to the agency how it addresses fifteen key safety areas in designing their vehicles and systems. NHTSA is in the midst of developing a template for the Letter, and we believe NHTSA should establish a clearly defined and practicable approach that does not create an undue administrative burden that could slow innovation. It is also our expectation that NHTSA will not use the Guidance and the Safety Assessment Letter as a mechanism for "premarket approval" (or "premarket disapproval") of automated vehicle technology, as this would extend beyond the agency's current authority.

Second, the agency has developed a *Model State Policy* which seeks to provide guidance to the States in order to help support a more uniform nationwide approach to automated vehicle policy. While the Policy cannot in itself preempt state action, it does set a clear marker in defining the roles of State government in addressing issues related to vehicle automation. We support the strong statements in the Policy that affirm that "[t]he shared objective is to ensure the establishment of a consistent national framework rather than a patchwork of incompatible laws," and that "[the] Guidance is not intended for States to codify as legal requirements for the development, design, manufacture, testing, and operation of automated vehicles."

However, despite the guidance in the Model State Policy, several states are in the process of establishing their own regulatory programs for automated vehicles. In some instances, state departments of motor vehicles would assume the responsibility of determining whether a particular automated vehicle or system is safe and thus may be sold or operated in the state. Such state-by-state regulations would present a significant obstacle to the future testing and deployment of automated vehicles. While the Model State Policy clearly delineates the federal roles and states' roles, it does not clearly limit or prevent state regulation of automated vehicle design and performance.

Additionally, we have some concerns with certain recommendations in the Model State Policy that encourage states to regulate automated vehicle test programs. Already, we have seen state proposals to require manufacturers to obtain an ordinance authorizing testing from each local jurisdiction in which testing will be conducted. However, Federal law authorizes original manufacturers to conduct on-road test programs and authorizes NHTSA to regulate test programs. Allowing a patchwork of state and local test requirements for automated vehicle testing would significantly obstruct the development of these vehicles. We are open to working with NHTSA and Congress to ensure there is a path forward for automated vehicle deployment without unnecessary obstacles at the state level.

Third, the Federal Policy provides a useful description of the agency's current *regulatory tools*, which includes issuance of safety standards, interpretations of the meaning and application of

standards, and exemptions from standards, as well as the agency's ability to take enforcement action regarding safety related defects. Each of these tools could have a valuable application in facilitating and regulating the entry of automated vehicles into U.S. commerce. At the same time, we must consider the long-term efficacy of these tools in determining whether other regulatory and non-regulatory policies may be appropriate and necessary in the future. It is important that any action be data driven and technology neutral.

Finally, the agency discusses the potential *new tools and authorities* that may be necessary in addressing the challenges and opportunities involved in facilitating the deployment of automated vehicles. We agree with NHTSA's assessment that new authorities could assist the agency in facilitating the development and introduction of automated technology. However, imprudent legislation in this area could have the opposite effect and delay technology development. For example, we see no basis at all for any change to the self-certification system for vehicles. The Federal Policy's discussion of the Federal Aviation Administration (FAA) process of "premarket approval" is not practical given the structural differences between the automotive industry and aviation sector, and implementation of such an approach could significantly slow innovation. Similarly, the Safety Assessment Letter should not be used as a means to prohibit testing or deployment of technology without adequate data to support an unreasonable safety risk.

We believe that NHTSA's Federal Automated Vehicle Policy is an important first step in the development of a flexible and nimble approach that can adapt to the pace of technology. However, the document requires further clarification and refinement to achieve these goals. Global Automakers is currently preparing comments on the NHTSA guidance and will provide a copy to the Committee upon submission to NHTSA. Additionally, we agree with NHTSA that the agency should update its Federal Automated Vehicle Policy and regularly review the Policy, as it is designed to never be frozen or final. Global Automakers and its members remain committed to working with federal, state, and local governments to ensure there is a flexible, consistent framework for automated vehicle technologies so consumers can fully realize the benefits as quickly as possible.

While NHTSA's Federal Automated Vehicle Policy was a significant step towards a workable policy that will promote the development of life-saving automated vehicle systems, more can be done at the federal level. Perhaps most important is providing the framework for the deployment of vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications through Dedicated Short Range Communication (DSRC) connectivity. These systems, which operate in the 5.9 GHz Safety Spectrum, will augment on-board sensor information to help improve the decisions made by automated vehicles regarding safety-critical situations and also improve the transition to a more automated fleet in the future by increasing situational awareness between both automated and non-automated vehicles on the road. The Department of Transportation is developing a new vehicle safety standard that would require vehicles to be equipped with DSRC technology. Global Automakers looks forward to the release of the proposed rule, and will continue to work with the Federal Communications Commission to ensure that the Safety Spectrum remains free from harmful interference.

The automobile industry continues to provide innovative technologies with demonstrable safety, mobility, and environmental benefits. To achieve these benefits, there must be close collaboration and coordination among and between government, industry, academia, and other stakeholders. Global Automakers and our member companies believe that connected and automated vehicles represent the next giant leap towards our shared long-term goal of safer and cleaner, and more efficient vehicle transportation.

Hearing of the U.S. House Energy & Commerce Committee
Subcommittee on Commerce, Manufacturing and Trade
"Disrupter Series: Self-Driving Cars" Hearing
Tuesday, November 15, 2016

Self-Driving Coalition for Safer Streets
Testimony Submitted for the Record

Chairman Burgess, Ranking Member Schakowsky, and Members of the Committee, on behalf of the Self-Driving Coalition for Safer Streets ("Coalition"), I am pleased to submit this written testimony for the record of the subcommittee's "Disrupter Series: Self-Driving Cars" hearing on November 15, 2016.

As President Obama noted in the Pittsburgh Post-Gazette, "self-driving cars have gone from sci-fi fantasy to an emerging reality with the potential to transform the way we live." This technology has the potential to be truly transformative—forever altering our concept of transportation and mobility while also preventing thousands of roadway fatalities. This is an important subject for the consideration of policymakers, and we appreciate your convening this hearing and soliciting input from the many stakeholders across the self-driving ecosystem.

This statement outlines what we believe policymakers should consider in order to create a consistent and uniform national framework for the testing and deployment of self-driving cars. We focus primarily on the "Federal Automated Vehicles Policy" ("Policy"), which the National Highway Traffic Safety Administration ("NHTSA") recently published for comment.

The Self-Driving Coalition for Safer Streets was established by Ford Motor Company, Google, Lyft, Uber, and Volvo Cars in April 2016 to work with lawmakers, regulators, and the public to realize the safety and societal benefits of fully self-driving vehicles. This cross section of technology, automobile, and transportation network companies reflects diversity and clearly demonstrates the widespread interest in developing this technology. The Coalition is focused on enabling development and deployment of Level 4 or Level 5 fully automated vehicles. We believe these levels have great potential for gains in safety and mobility.

The Coalition is dedicated to working collaboratively with civic organizations, municipalities, and businesses to bring the vision of fully self-driving vehicles—that is, vehicles that do not require a human driver—to America's roads and highways. Self-driving technology has the great potential to enhance public safety and mobility (especially for the elderly and disabled), reduce traffic congestion, and advance transportation efficiency, and the Coalition's mission is to promote these potential benefits and support the their safe and rapid deployment

The NHTSA Policy represents a significant update of the Preliminary Statement of Policy on Automated Vehicles the agency published in 2013. Most important is the recognition that manufacturers and other entities have made tremendous strides in evolving automated vehicle technology. The Policy captures the significant shift towards highly automated vehicles ("HAVs"), and we appreciate the agency's work on it. However, we believe that the Policy needs additional clarification from NHTSA.

The agency's Vehicle Performance Guidance ("Guidance") and Safety Assessment letter is a novel approach that attempts to provide the industry with flexibility to develop, test, and refine this technology. However, there are concerns that the Guidance could be interpreted to require manufacturers to provide multiple and repeated submissions to the agency. This could potentially hamper innovation and force companies into an overly burdensome paperwork exercise. We also have concerns with how the agency would protect confidential or proprietary business information. NHTSA should focus on limiting the information being requested from manufacturers to the narrowest scope possible to avoid unnecessary accumulation of sensitive industry data and the potential commercial harm companies could suffer if publicly released.

While the Policy outlines the important delineation between federal and state roles in regulating automated vehicles, it does not outright discourage states from adopting and mandating the Vehicle Performance Guidance. It is vital for the states to maintain their existing responsibilities in establishing licensing, registration, and insurance requirements. Any state actions beyond that risks creating a patchwork of varying state laws that may inhibit HAV testing and development. We encourage this Committee and Congress to work to establish a single national framework to move toward the rapid and safe deployment of HAVs.

The Coalition believes that the emergence of HAVs requires NHTSA, the industry and other stakeholders, to develop new approaches to solving the complex issues that accompany the design, testing, and deployment of HAVs. However, we note that some of the proposed new regulatory authorities and tools in section IV of the Policy run counter to this objective. Among other drawbacks, some of these new authorities and tools risk imposing prohibitive costs on manufacturing of HAVs and delaying the rollout of important safety features and updates. These proposed new authorities include pre-market approval, imminent hazard authority, post-sale authority to regulate software changes, safety assurance tools, functional and system safety authority, additional recordkeeping and reporting, enhanced data collection tools,

On the other hand, we believe that several of the "modern regulatory tools" discussed in the Policy would facilitate the safe and rapid deployment of HAVs.

- ***Expansion of exemption authority for HAVs.*** We support enabling manufacturers and technology companies to expand and improve the pathway to test and ultimately deploy. Granting NHTSA this new authority would supplement its existing authorities to expedite the safe introduction of HAVs.
- ***Amend existing FMVSS.*** Targeted rulemakings to amend several key Federal Motor Vehicle Safety Standards is an essential step to facilitate the widespread deployment of vehicles designed from the ground up to be fully self-driving. The potential safety benefits of such vehicles are enormous. The Coalition will support NHTSA's proposed FMVSS amendment effort by submitting suggestions for such a new FMVSS. We strongly urge Congress to work with NHTSA to prioritize this rulemaking.
- ***NHTSA Special Hiring Tools.*** We encourage Congress to provide NHTSA with additional resources so that the agency is able to obtain and develop the necessary expertise on HAVs. A capable technical staff will be vital to ensuring that future

agency actions related to HAV testing and development are fully informed and not misguided.

In light of the considerations set forth above related to the Policy issued by NHTSA, the Coalition is calling for Congress to enact legislation to facilitate the rapid deployment of HAVs. Legislation to carry out this objective could include the revision of NHTSA's exemption authority to allow for a greater number of vehicles to be allowed on the road for development or field evaluation of HAVs. This flexibility would provide multiple avenues for manufacturers and innovators to safely explore a number of vehicle changes that would promote the safety of HAVs and passenger comfort and utility. As an initial matter, we urge Congress to eliminate or raise the exemption cap to a level that will help facilitate meaningful commercial deployment of HAVs.

* * *

We appreciate the opportunity to provide this testimony, and reiterate our thanks for the Subcommittee holding this important hearing. We look forward to providing additional information in the future as the Congress continues to debate and discuss self-driving vehicles.

Sincerely,

Hon. David L. Strickland
Counsel, Self-Driving Coalition for Safer Streets

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CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

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December 1, 2016

Dr. Mark Rosekind
Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Dr. Rosekind,

Thank you for appearing before the Subcommittee on Commerce, Manufacturing, and Trade hearing entitled "Disrupter Series: Self-Driving Cars."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions by the close of business on Thursday, December 15, 2016. Your responses should be mailed to Giulia Giannangeli, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to **Giulia.Giannangeli@mail.house.gov.**

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Michael C. Burgess, M.D.
Chairman
Subcommittee on Commerce,
Manufacturing, and Trade

cc: Jan Schakowsky, Ranking Member, Subcommittee on Commerce, Manufacturing, and Trade

Attachment

November 15, 2016 Hearing on
"Disrupter Series: Self-Driving Cars"
Committee on Energy and Commerce
Subcommittee on Commerce, Manufacturing, and Trade

Additional Questions for the Record
Mark R. Rosekind, Ph.D., Administrator
National Highway Traffic Safety Administration

The Honorable Michael C. Burgess M.D.

1. **An important issue is ensuring that we have the right policy framework in place to promote continued innovation while avoiding a patchwork of state regulations, or state regulations related to the performance and design of vehicle systems. The guidance does a good job of seeking to define some of the key roles and responsibilities for Federal and State governments in addressing automated vehicle policy. The NHTSA Federal Policy also includes a number of strong statements such as the "Guidance is not intended for States to codify as legal requirements for the development, design, manufacture, testing, and operation of automated vehicles." At the same time however, there are conflicting statements in the model policy that suggests that an application to the state for testing "should include the manufacturer's or other entities safety and compliance plan for testing vehicles which should include a self-certification of testing and compliance to NHTSA' s Vehicle Performance guidance." What is NHTSA's intent with respect to states seeking to require compliance?**

   RESPONSE: The Model State Policy is designed to accomplish two aims: first, to clarify and delineate the Federal and State roles for the regulation of highly automated vehicles; and second, to lay out a framework that the States may use as they write their laws and regulations so that we build a consistent, national framework for the testing and operation of highly automated vehicles.

   As stated in the Model State Policy, NHTSA strongly encourages States to allow NHTSA alone to regulate the safety and performance aspects of HAV technology and vehicles. NHTSA encourages those States that wish to regulate HAV testing to incorporate relevant components of the Model State Policy into their regulations, in order to promote a more cohesive body of authorities and avoid a patchwork of inconsistent State laws and regulations. Through the development of the Model State Policy, many States expressed their views that while they were generally comfortable with the Federal government having the responsibility for the regulation of vehicle and equipment safety, they would need confidence that vehicle manufacturers, testers and other entities were conforming to the safety assurance approach envisioned in the Federal Automated Vehicles Policy. Therefore the Model State Policy suggests to States that they may request submission of confirmation that an automaker, tester or other entity has followed the principles set forth in the Vehicle Performance Guidance. The Model State Policy recommends that a copy of the Safety Assessment Letter could serve that purpose, but as that letter is presently voluntary, a State

could request alternate documentation in lieu of the letter (e.g. from entities that do not submit the Safety Assessment Letter).

Absent this assurance, and absent the implementation of a new Federal Motor Vehicle Safety Standard that would preempt State action, states have the legal right and power to develop their own vehicle safety and performance criteria. Such actions would create the undesired patchwork of state laws and regulations that would inhibit innovation by presenting developers of these technologies multiple sets of potentially conflicting standards.

a. Isn't requiring compliance the same as "codifying" what are intended to be flexible, nimble guidelines, through regulation?

RESPONSE: Not in our view. As discussed in the Policy, we intend for the Vehicle Performance Guidance to be nimble and flexible, changing over time as real-world experience and new technological advances provide greater understanding of how to best ensure safety. As such, we recommend that individual States do not codify any of the specific language or requirements of the Vehicle Performance Guidance in their own laws and regulations.

For States that seek assurance that vehicle safety has been adequately addressed before they permit the testing of highly automated vehicles, they may request copies of the Safety Assessment Letter, or another form of documentation, providing evidence the entity seeking to test a highly automated vehicle has addressed the functional safety principles and considerations described in the Vehicle Performance Guidance.

It is NHTSA's intention to make Safety Assessment Letters publicly available after appropriate review by the Agency, which may eliminate the need for States to request copies of those submissions from entities seeking permission to test in their State.

b. Can you please clarify NHTSA's position on codifying the Policy?

RESPONSE: The Agency does not intend for States to codify the Vehicle Performance Guidance. NHTSA's intention is to update the Policy on an annual basis. Those updates will be based on public feedback, technological innovations, and our experience in implementing the Policy.

The Federal Automated Vehicles Policy delineates the Federal and State roles for the regulation of highly automated vehicles. The Policy discourages States from codifying the federal Vehicle Performance Guidance in their own laws and regulations. Such codification could create unintended impediments to the development, safe testing and deployment of HAVs and reduce the flexibility the Policy seeks to promote. State codification of some or all provisions of the Vehicle Performance Guidance could effectively freeze State law and regulations at a particular point in time and thereby deprive the State of the benefits of subsequent evolutions of and improvements to the Guidance based on innovation and experience over time. Because automated vehicle technology is evolving so rapidly, it is important that government regulation at all levels

be nimble, flexible, and able to rapidly adjust to changes in technology and its uses. Codifying any particular iteration of the Vehicle Performance Guidance could work against the flexibility that is essential to taking full advantage of the promise of automated vehicles and technologies.

It is entirely consistent with this approach for a State to request a copy of a Safety Assessment Letter from an entity that has submitted such a letter to NHTSA. Such a request would not codify the Vehicle Performance Guidance.

c. **Do you intend to clarify and connect these conflicting statements in the Policy? If so, when would that clarification be provided?**

RESPONSE: Based on stakeholder feedback and questions, the Agency is preparing to release a Frequently Asked Questions document that will further clarify this matter and other parts of the Policy that have been the subject of some confusion and misconceptions. NHTSA expects to release this in January 2017.

2. **In the Federal Automated Vehicles Policy, NHTSA has indicated that they are adopting the levels of automation as defined in SAE 13016. While significantly clarifying the different automation levels achieved by different systems there may still be some ambiguity as to the specific level for a particular system. In this case SAE J3016 leaves the determination up to the manufacture because they best understand the particular aspects of the system design and intent. Do you agree that the manufacturer should make this determination?**

RESPONSE: Under the Policy, the determination of the appropriate level of automation is the responsibility of the entity testing or deploying that system. However, as the Next Steps section of the Policy indicates, NHTSA will publish a report that provides an objective method that manufacturers and entities may use to classify their automated vehicle systems.

a. **How would the agency respond if they disagree with a manufacturer's judgement?**

RESPONSE: The Safety Assessment Letter is an opportunity to begin an open dialogue between NHTSA and manufacturers and other covered entities regarding the safe testing and deployment of an automated system. If NHTSA has questions regarding any aspect of the system, including its classification, the follow-up dialogue could be used to discuss those questions and seek additional information if necessary to understand how an entity has addressed one or more of the 15 Safety Assessment areas.

3. **The FAST Act prohibits NHTSA from enforcing failure to comply with Guidance. How would the agency react to a manufacturer that chooses to not to submit a safety assessment letter to the agency?**

RESPONSE: The Safety Assessment Letter is one source of information NHTSA will use to evaluate how safety is being addressed by manufacturers and other entities developing and testing HAV systems. If a manufacturer declines to submit a Safety Assessment Letter,

NHTSA may utilize and pursue additional sources of information and outreach activities to understand how that manufacturer has considered the Safety Assessment areas

a. Could this information be required through a Special Order or Information Request?

RESPONSE: If NHTSA does not otherwise have sufficient information to adequately assess the safety aspects of HAV systems and to ensure vehicle safety, NHTSA will take necessary steps to obtain the requisite information, which could include the use of Information Requests or Special Orders when appropriate.

b. Would NHTSA prevent a manufacturer from deploying?

RESPONSE: NHTSA will continue to use all of its existing tools and authorities to ensure the safety of the American public in evaluating and assessing the deployment of HAV systems.

4. During the release of the Federal AV Policy, the Administration noted the critical role of vehicle connectivity in automation and their intention to move forward with a rule to mandate connected car technology in all new vehicles. Can you please provide the Committee with a status update of this proposed rulemaking?

RESPONSE: On Dec. 13, 2017, NHTSA issued an NPRM initiating a rulemaking regarding "Vehicle-to-Vehicle" communications, which includes a proposed mandate for the inclusion of vehicle-to-vehicle communication technology in all new light-duty vehicles sold in the United States.

5. Last year, we passed the FAST Act, and one of the important changes was allowing automakers to (under certain circumstances) test new cars even if they do not comply with all Federal Motor Vehicle Safety Standards (FMVSS). The idea was to allow manufacturers to test new technology and not be constrained by the standards-like testing a car with no steering wheel. But the Model Policy states that manufacturers should certify that test vehicles meet "all applicable" FMVSSs.

a. Doesn't this conflict with the spirit and intent of the FAST Act?

RESPONSE: NHTSA believes that the Model State Policy is consistent with the FAST Act amendment to 49 U.S.C. 30112, given that statutory provisions necessarily control over agency guidance. The Model State Policy must be read in the context of existing statutory provisions. The FAST Act allows certain manufacturers to introduce non-FMVSS-compliant vehicles into interstate commerce solely for purposes of testing, as long as those manufacturers do not subsequently sell those vehicles. Because the FMVSS do not "apply" in these particular instances, a manufacturer need not certify compliance with (inapplicable) FMVSS. The Agency would, however, expect the manufacturer's application to clearly state that it is relying on the FAST Act provision rather than certifying to applicable FMVSS. For manufacturers who are not eligible to rely on this

provision, we would still expect them to certify that they meet applicable FMVSS and refer to that certification in their application to test.

b. **If a state were to adopt this aspect of the Model Policy-in other words, if a state were to require that all test vehicle comply with all FMVSSs-wouldn't that mean that a manufacturer couldn't test vehicles with no steering wheels? Was that the intent?**

   i. **How does that help testing and the development of this technology?**

   RESPONSE: The intent of the Model State Policy was to encourage manufacturers to inform states about their test vehicles' FMVSS compliance status. If a manufacturer has certified that its test vehicle complies with applicable FMVSS, they should have no trouble in stating so. If a manufacturer is relying on the FAST Act amendment to 49 U.S.C. 30112 or some other exemption instead of complying with the FMVSS, we would expect that to be stated in the test application. Either way, states would have the information they need about whether and how manufacturers are complying with the FMVSS.

c. **Does NHTSA have any views as to whether the FAST Act preempts state restrictions on testing?**

   RESPONSE: NHTSA has no views on whether the FAST Act preempts state restrictions on testing.

The Honorable Tony Cardenas

1. **Given the recent breaches at OPM, how does NHTSA propose to secure all the sensitive data it will receive?**

   RESPONSE: NHTSA is looking at options for data collection and storage from entities who submit information via a Safety Assessment Letter. Options for storing data received from entities about testing and deployment is also under review. The specific method for collection and storage of data has not been determined. However, NHTSA will follow security measures to ensure sensitive information is protected.

2. **When does NHTSA hope to have more in-depth guidance for levels 4 and 5?**

   RESPONSE: NHTSA has committed to updating the Policy on an annual basis as the knowledge base increases regarding highly automated systems and vehicles and the technology evolves. This will affect guidance for all levels of automation including levels 4 and 5.

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