INFORMATION FOR MOTOR VEHICLE & LAW ENFORCEMENT OFFICIALS

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WHEN FANTASY BECOMES REALITY

Preparing today for tomorrow's autonomous vehicles

BY MATT ALDERTON

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BY ELIZABETH MILLARD

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CHECKING IN WITH THE CHAIR

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TAKING THE HIGH ROAD A video detailing the challenges of

legalized recreational marijuana.

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Link Up

AAMVA'S 2017 BUSINESS PLAN FOCUSES ON MAKING CONNECTIONS

AMVA's vision—Safe Drivers. Safe Vehicles. Secure Identities. Saving Lives!—begins and ends with people. For AAMVA's staff, that translates into helping our members fulfill their missions and goals to serve the residents of their jurisdictions. This vision is grounded in AAMVA's Strategic Framework of member-driven solutions that support our members' evolving business needs.

In this and future CEO updates in *MOVE* magazine, I will highlight key elements of AAMVA's 2017 business plan, shaped by three priorities in our Strategic Framework:

- > Culture of excellence
- > Secure and reliable technology

> Financial integrity The rapidly evolving world of driver and motor vehicle safety and credentialing places demands on our member jurisdictions that are exciting and groundbreaking. It means those on the leading edge are blazing a trail from which others can learn. That is why the ability to connect our members through conferences, committees, working groups and publications (online and printed) is at AAMVA's core. Through these traditional platforms, members collaborate on best

practices, resource guides and model legislation, and share lessons learned. Making sure AAMVA is delivering optimal conferences, workshops and meetings is top on our list of 2017 priorities. We encourage you to attend our Workshop and Law Institute, to be held March 15–16 in Minneapolis, to experience this quality firsthand.

AAMVA also plays a critical role in connecting

our jurisdiction members in a less traditional way—through our information technology (IT) infrastructure. Another area of focus in our 2017 business plan is to make sure our IT infrastructure continues to support the AAMVA network upon which our members rely. In FY 2016, our IT team achieved a 99.9 percent application availability time. We want to make sure this great performance continues well into the future. Thus, AAMVA's Board of Directors approved an IT Strategic Roadmap (ITSR) project to ensure AAMVA makes the best use of new technologies to maintain our high-performing, secure and reliable network. The project will receive insight and guidance from a board-appointed ITSR Steering Committee.

With the 2016 holiday season in my rearview mirror, I am looking forward to a great year at AAMVA—a year filled with member-focused activities designed to connect you to other members and to the latest issues, resources and best practices that matter to your business.

In this Winter 2017 issue of *MOVE* magazine, you'll learn about how automated vehicles are becoming part of the AAMVA landscape and the promise this lifesaving technology offers. And while we plan for a future of driverless vehicles, the driver is still at the heart of roadway safety. You'll also read about the challenges legalized recreational marijuana and drugged driving present, and how our enforcement colleagues and others are managing them. **m**

Anne Ferro, AAMVA President & CEO

find out more :

VISIT AAMVA.ORG/STRATEGIC-PRIORITIES TO LEARN MORE ABOUT THE AAMVA 2016-2018 STRATEGIC FRAMEWORK.

SMARTER CARS. SAFER DRIVERS.

Find out about today's car safety features

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Intrividual Statement S

THE NEW YORK STATE DMV CRACKS DOWN ON UNDERAGE DRINKING AND FAKE IDs WITH OPERATION PREVENT BY BRITTANY MAGEE

he message of the New York State Department of Motor Vehicles' Operation Prevent is simple: Underage drinking and using a fake ID are not worth it.

"Underage drinking has real consequences, and sometimes it is a matter of life and death," said Terri Egan, acting Governor's Traffic Safety Committee (GTSC) chair and New York DMV executive deputy commissioner, in a July 2016 press release. "Leave the fake IDs at home and avoid the possibility of lifelong consequences due to one bad decision."

Operation Prevent, which began in 2005, is a collaboration among the New York State DMV, law enforcement, bar owners, the State Liquor Authority (SLA) and GTSC to deter underage drinking, keep roadways safe and combat the use of counterfeit IDs. To do this, Operation Prevent investigations are conducted year-round at bars, concert venues and other places underage patrons are likely to gather. 'Last-drink locations,' which are tracked by law enforcement agencies when those under 21 are arrested for DWIs (driving while intoxicated), also are heavily targeted, says Owen McShane, director of investigations, New York State DMV.

COLLABORATION IS KEY

The collaboration among DMV investigators and law enforcement is essential to Operation Prevent's success. When operating a sting on their own, DMV investigators would only be able to make about 10 arrests. A sting in October 2016 in Rochester, New York, resulted in 19 counterfeit IDs being confiscated. While DMV investigators identified the fake IDs by examination and with the help of secondary

Lieutenant Governor of New York Kathy Hochul joins New York State DMV Director of Investigations Owen McShane to review the investigative process on fake IDs.

> authentication equipment like a high-speed scanner, state troopers issued tickets and handled any arrests. "By combining forces, we get a lot better results," says McShane.

This past summer, with the support of Gov. Andrew Cuomo, Operation Prevent launched numerous coordinated stings during the summer concert season. For example, at Nikon at Jones Beach Theater on Long Island, park police and DMV investigators made 43 arrests for underage drinking and possession of fake IDs. Twenty of those individuals were hospitalized for alcohol poisoning before being released to their parents.

"It's a fact that many college students participate in underage drinking," says McShane. "We're just trying to change their behavior, not ruin them for life." First-time offenders found to be using fake IDs with the intent of purchasing

winter 2017 MOVEmag.org 09 move

IN 2016, STINGS AT TARGETED LOCATIONS ACROSS NEW YORK STATE RESULTED IN 818 ARRESTS AND THE SEIZURE OF 862 FRAUDULENT IDS, BOTH SINGLE-YEAR RECORDS. THE PREVIOUS YEAR'S RECORD WAS 758 ARRESTS AND 751 SEIZED IDS.

alcohol can have their license revoked for a minimum of 90 days or up to one year, in addition to paying a fine.

KNOWLEDGE MATTERS

Education plays a key role in the success of Operation Prevent. The DMV and SLA work together to educate bar owners and staff of licensed establishments about

JURISDICTION SPOTLIGHT

THREE KEYS TO SUCCESS

Owen McShane, director of investigations at the New York State Department of Motor Vehicles, shares how other jurisdictions can implement a program like Operation Prevent.

- **COLLECT DATA.** Work with law enforcement agencies to find hotspots for underage drinking, and target those locations.
- > **SECURE FUNDING.** Operation Prevent is funded through the Governor's Traffic Safety Committee (GTSC).
- > **BUILD PARTNERSHIPS.** "The results are very impressive when we team up," says McShane. "Cooperation is key with this type of enforcement."

new security features included on driver's licenses and how to identify a counterfeit. Many bar owners and the SLA have even purchased their own authentication equipment.

A number of universities have asked DMV investigators to speak not only about underage drinking, but also about the dangers of identity theft since the majority of counterfeit IDs are now made overseas (many in Russia and China). When individuals place an order for a fake ID, they provide their real identification. This puts them at risk of having their identity stolen in the future, says McShane.

DMV investigators also share information about counterfeit IDs with AAMVA and other jurisdictions as much

DRUG-IMPAIRED DRIVING

Here are the most recent jurisdiction surveys related to drug- and alcohol-impaired driving. All of these surveys have additional questions that provide more information. The full details of each survey can be viewed in the AAMVA online survey tool at **AAMVA.ORG**/ **SURVEY/USER/SEARCH.ASPX**.

DRUG-IMPAIRED DRIVING & MONITORING TECHNOLOGY [30 RESPONSES] TO WHAT EXTENT IS DRUG-IMPAIRED DRIVING A PROBLEM IN YOUR JURISDICTION?

the magnitude of the problem.

We know it is a problem from our data, and it is a priority for policy/programming.

We know it is a problem from our data, but it is not a priority for policy/programming.

DOES YOUR JURISDICTION CURRENTLY HAVE A PROGRAM IN PLACE FOR DRUG-IMPAIRED DRIVERS THAT INVOLVES THE USE OF TECHNOLOGY FOR ONGOING MONITORING AND DETECTION OF DRUG USE?

Yes, and we plan to continue the program. Yes, and we plan to expand the program.

No, but we are interested in implementing such a program within the next five years (provided that the technology is available).

No, and we have no plans to introduce a program within the next five years.

No response.

COMBINATION DUI/DWI/OWI LEGISLATION [29 RESPONSES]

DOES YOUR STATE CURRENTLY HAVE ENACTED LEGISLATION EXPLICITLY ADDRESSING DUI/DWI/ OWI COMBINATIONS (DRUGS AND ALCOHOL)?

CDL SUSPENSIONS FOR POSITIVE DRUG OR ALCOHOL TEST [28 RESPONSES] HAS YOUR JURISDICTION TAKEN THE ADDITIONAL STEP OF as possible. For example, some states' licenses are more frequently counterfeited than others, says McShane. The NY DMV will share the fake IDs obtained through Operation Prevent stings so states can understand how they're being produced. "It helps them make modifications to the document to prevent people from counterfeiting it as easily," he says.

"Operation Prevent's results are impressive," McShane concludes. The goal in 2017 is to have more stings throughout the state in order to further its message: Underage drinking and using a fake ID are not worth it. **m**

go online \equiv

VISIT AAMVA'S MEMBERS-ONLY WEBINAR ARCHIVES PAGE TO DOWNLOAD THE NEW YORK STATE DMV'S "UNDERAGE DRINK-ING STINGS: A JURISDICTION PROGRAM SHOWCASE" WEBINAR TO LEARN MORE ABOUT OPERATION PREVENT AT AAMVA.ORG/WEBINAR-ARCHIVES.

CANCELING OR SUSPENDING CDL LICENSES AS A RESULT OF POSITIVE TESTS OR REFUSALS?

No

MORE RESOURCES

AAMVA's website lists studies and reports produced by jurisdictions and other agencies. Available reports include the following:

- > Marijuana Legalization in Colorado: Early Findings
- > Marijuana, Öther Drugs and Alcohol Use by Drivers in Washington State
- Results of the National Roadside Survey of Alcohol and Drug Use by Drivers
- > Drug and Alcohol Crash Risk

Visit **aamva.org/Jurisdiction-Studies** to download the reports and learn more.

Time to Upgrade?

INTRODUCING A NEW BEST PRACTICE GUIDE FOR LARGE-SCALE INFORMATION TECHNOLOGY PROJECTS BY ANDREW CONNER

or most motor vehicle departments, upgrading information technology (IT) systems is not an easy task. It often involves large structural changes that require careful management to stay on schedule and on budget. AAMVA has seen large-scale IT projects across North America succeed and fail, and those experiences inspired the creation of a System Modernization Working Group.

The AAMVA working group is preparing to release a *System Modernization Best Practice* guide, which aims to help jurisdictions succeed with large-scale IT projects.

"Our intent is to provide a roadmap," says Rose Jarois, director of Department Services Administration for the Michigan Department of State and a working group member. "For each topic, working group members contributed knowledge and provided specific examples. We're not trying to give everyone a prescribed way of doing things," she says.

The decision to avoid a 'one size fits all' approach was based on the experiences of the working group members. "The reason the team gelled so well is we had people who had failures and successes," Jarois says. "We pulled together what worked and what didn't from many sources. That's what makes this a great document." The System Modernization Best Practice guide includes chapters on many project management topics, including system architecture, requirements and methodology, security, data cleansing and migration, procurement, and business case development, among others.

in a lights

"One area that jurisdictions agree they

can't spend too much time on is organizational change management," says Sheila Prior, AAMVA's director of member support for Regions III and IV and staff liaison to the working group. "System modernization projects have a significant impact on an organization, and the reality is that people don't like change. The best practice guide helps identify how to handle change management, communication plans, training, support and more to ensure a project's success."

The lessons from the *System Modernization Best Practice* guide go beyond system upgrades. "The [guide] brings together expertise from maybe a dozen

This winter marks the official release of the Noncommercial Model Driver Testing System (NMDTS). There has long been a model testing program for commercial drivers. However, until recently, no analogous model for noncommercial drivers existed. This changed when AAMVA announced the NMDTS program, and now state administrators can find updated best practices and guidelines surrounding the program on AAMVA's website. When asked why states should look to implement these recommendations for their noncommercial driver testing programs, Julie Knittle, chairperson of AAMVA's Driver Standing Committee and assistant director at the Washington Department of Licensing, had a simple answer: uniformity.

"Currently you have 51 jurisdictions doing noncommercial license testing in 51 different ways," Knittle says. "And all of those are based on different jurisdictional laws and procedures. [NMDTS] helps ensure, for example, that a driver [moving] from Colorado to Oregon is meeting the same level of driving ability as a driver from Oregon who was tested in that state."

musings

{THIS MONTH'S QUESTION}

HOW ARE LAW ENFORCEMENT AGENCIES USING SOCIAL MEDIA TO INTERACT WITH THEIR MOTOR VEHICLE DEPARTMENTS AND/OR THEIR RESPECTIVE COMMUNITIES?

Kyle Moore, Government Media Relations, Washington State Highway Patrol As a law enforcement agency, we realize that the community

is talking about us and our state agency partners on social media. We can either ignore their voices or be part of their conversation. Every day we receive messages from our customers looking for answers. It is our responsibility to serve our customers and to give them timely, responsive answers.

We share common public safety goals with our Department of Licensing and other transportation agencies in our state. We all look for ways to collaborate and support each other's traffic safety activities and messages on social media to meet our state's ambitious goal of zero traffic fatalities and zero serious injury fatalities by the year 2030. Social media is an important and useful tool for meeting this goal through public outreach and education.

Officer Jacob Williams,

Office of Community Outreach and Media Relations, California Highway Patrol The importance of the impact of social media [interactions] between law enforcement and the public cannot be overstated. These technological innovations not only provide the public with greater access to information and an intimate perspective of law enforcement operations, but they also allow law enforcement to hear and better understand its audience.

Disciplined and thoughtful engagement in social forums provides opportunities to educate the public and to support our officers when their conduct is justified and when it deserves acknowledgment and praise. These forums also give us

Crossword

jurisdictions," Prior says, "and can be used for any big IT project." $\ensuremath{\mathfrak{m}}$

find out more **:**

VISIT AAMVA.ORG/SOLUTIONS-BEST-PRACTICES TO VIEW THE LATEST AAMVA BEST PRACTICES AND MODEL LEGISLATION. BE SURE TO CHECK BACK THIS SUMMER TO DOWNLOAD THE NEW SYSTEM MODERNIZATION BEST PRACTICE GUIDE.

In addition, NMDTS can help states save money they currently spend on creating and maintaining their own testing systems. And states can make use of the NMDTS materials—which include a driver manual, a parent or mentor guide, an examiner manual, a knowledge test question pool and the test itself—in whatever way works best for their jurisdiction.

"They're guidelines that are set up to be used a la carte, so you can implement what works best for your jurisdiction in the appropriate order," says Knittle.

opportunities to communicate our desire for self-assessment and willingness to learn from our inevitable human errors. We should always appreciate the need to follow up our words with actions, for our actions are what ultimately define us. As technology continues to evolve, the California Highway Patrol will utilize these advancements in communication to better serve the people of California.

Kansas Highway Patrol

The Kansas Highway Patrol has been using Twitter since early 2010, and Facebook since 2011. The KHP expanded its efforts when it added a "Tweeting Trooper" from each field troop within the state in early 2014. The troopers tweet about laws, road closures and other pertinent traffic safety issues, along with some personal tweets to humanize law enforcement. Other agencies often partner with the Patrol to put out messages, hoping it will further their reach.

The more popular items the Patrol incorporates into tweets include weather information, road closures, recruitment and traffic law information. Social media platforms have allowed the KHP to tell its own story, versus relying on the media or others to tell it instead.

ACROSS

- 1 This type of vehicle could reduce accidents and road deaths
- 6 Electric car company now installing self-driving software in all of its cars
- 7 One of the technologies being used in Google's self-driving cars
- **9** It makes for slippery road surfaces
- 10 Principal
- **11** Compass direction, for short

13 Car sticker **DOWN**

14 _____ hurry,

two words

choactive

marijuana

17 Largest study

the use of

investigating

drugs, alcohol

and medicines

while driving,

abbr.

19 AAMVA's

21 One of the

22 50 states

states that

has legalized

recreational

marijuana use

Trailblazer

ingredient in

15 Main psy-

- 1 Operated free of human control
- 2 Subjecting to experimental driving, vital before full implementation of automated
- vehicles **3** Get close to
- 4 Legalized drug in a few states that can impair a driver's cognitive functions
- **5** Additional tire
- 8 lt comes before a vowel

- **11** Association that has done a large crash risk study including drugs other than alcohol
- **12** Another word for impair
- 16 Regulations
- 18 Web address
- **20** Seek the support of

Digital Switch

THE MINISTRY OF TRANSPORTATION ONTARIO COLLABORATES WITH INFOSYS PUBLIC SERVICES TO DIGITIZE CARRIER REGISTRATION, LICENSING AND PERFORMANCE MONITORING BY MEGAN KRAMER

The Ministry of Transportation Ontario (MTO), along with Infosys Public Services (IPS), has implemented a new customer-centric carrier registration, licensing and performance monitoring system as part of its Road User Safety Modernization program. This new Registration and Licensing System of Ontario (RLSO) is a modernization of the MTO's previous 40-year-old system, digitizing service delivery for thousands of carriers and businesses.

in he head lights

RLSO is an enterprise services-based platform that utilizes a suite of Oracle/Siebel software products. It eliminates manual and paper-based processes and automates transactions, which helps guide workflow by providing any necessary information at the fingertips of employees and customers, says Linda Dunstall, director of Road User Safety Modernization at the MTO. With the implementation of RLSO. Ontario became one of the first jurisdictions in North America to have a truly modern, scalable and integrated carrier registration and performance monitoring solution built on a one-client, one-record model.

MTO and IPS were able to implement RLSO with little interruption to service, all while maintaining the integrity of the MTO's policies and

move 14 winter 2017 MOVEmag.org procedures. They both attribute this to a balanced, dedicated partnership that focused on mutual goals.

"The partnership with MTO was excellent," says Eric Paternoster, CEO of IPS. "The combined program management team was not dominated by either party and was dedicated to transparently trying to accomplish the business objectives laid out in the original proposal. We had committed and dedicated sponsorship at senior levels on each side."

"Infosys really hit the ground running," adds Dunstall. "They had studied our RFP and knew exactly what they needed to do and what additional information they needed from us."

Thomas Whyte, former senior client manager and MTO delivery partner for IPS, notes that the partnership

The Registration and Licensing System of Ontario (RLSO) was implemented in three phases over

the course of

14 months.

with MTO included both business and IT teams. "You want there to be a balance between business and IT when it comes to decision making, and MTO had already communicated the project requirements to both sides," says Whyte. "They kept us involved,

> and all of our executive reporting and meetings were done as a tri-party arrangement. MTO also did a very good job of making subject-matter experts available to us so we could understand the legacy systems, of which there were approximately 44 over the past 40 years and 100 different interfaces." RLSO has many benefits, including

360-degree views of each customer, reducing time to access records by up to 90 percent; reduced application processing time by up to 70 percent for some applications; increased effectiveness and accuracy; expanded delivery channels; and improved compliance and adaptability.

Whyte considers RLSO to be a success for a number of reasons, but particularly because of the system's increased functionality and ability to grow—even to other areas of administration and to other jurisdictions.

"The system is transportable to other jurisdictions because a lot of them have Oracle and some of these necessary components," he says. "We have the ability to leverage that and build similar systems for those jurisdictions with the ease of configurable business rules."

Jurisdictions that want to take advantage of this opportunity "need to be prepared to run pace with a vendor like Infosys," adds Dunstall. "They work 24/7 to deliver for you. The challenge for us was providing needed input to Infosys in a timely manner. We overcame this with stringent project management techniques and dedicated resources. Our governance and accountability model was key to that success." m

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PREPARING TODAY FOR TOMORROW'S AUTONOMOUS VEHICLES

BY MATT ALDERTON

* * * * * * * * * * * * * * *

Before German engineer Karl Benz created the first automobile in 1885, roads were made of dirt, gasoline was sold at drug stores as a treatment for head lice, and the best way to get across town quickly was on the back of a horse. The idea of a 'horseless carriage' powered by a motor instead of a mare seemed ludicrous. Over a century later, however, the only thing ludicrous about cars is the notion of a world without them.

when FANTASY

move 16 MOVEmag.org

The advent of autonomous vehicles means North America's transportation landscape is on the verge of yet another radical transformation. Instead of reacting to the shift years after it happens, like in the case of the first motorized vehicles, governments have an opportunity to do things differently this time—they can save lives by preparing for the shift years before. Which is exactly what regulators are doing across the United States and Canada, where autonomous vehicle policies are being engineered in step with automated vehicle technology.

THE FUTURE IS HERE

It took decades for Americans to trade in their horses for cars. Mass production of Henry Ford's Model T began in 1913, yet some areas of the country primarily relied on horse-and-buggy transportation until the end of the Great Depression in 1939.

E

6

The transition to automated vehicles won't be much faster, predicts Nat Beuse, association administrator for Vehicle Safety Research at the National Highway Traffic Safety Administration (NHTSA).

"It takes a long time for the fleet to turn over," he says. "The average age of a vehicle on the road today is well over 11 years old. That means that for some time we will have a mix of vehicles on our roads."

Indeed, the Institute of Electrical and Electronics Engineers (IEEE) predicts that by 2040, 75 percent of cars on the world's roads will be fully autonomous, which means at least some people will still be sitting in the driver's seat of their vehicle mid-century, even if most of their neighbors are lounging comfortably in the backseats of theirs.

That's not to say that automated vehicles are reserved for the future. Although it could take 30 years or more for all cars to be fully autonomous, some cars will be self-driving by the beginning of the next decade. A handful already are. Google, for instance, successfully tested its self-driving technology on a public road for the first time in 2015. Uber likewise has been testing its system since 2016. And Tesla already is manufacturing all of its vehicles with "the hardware needed for full self-driving capability"—even though drivers can't yet use it. Automakers like BMW and Ford, meanwhile, plan to begin producing automated vehicles as early as 2021; BMW's will be SAE Level 3, meaning it will be capable of self-driving only in certain conditions, like on

EYES ON THE ROAD

Self-driving cars boast a number of high-tech features that help them to comprehend their surroundings. Video cameras located in different areas of the vehicle provide 360 degrees of vision. Ultrasonic sensors complement the cameras by detecting objects, and odometry sensors keep track of distance traveled. Radar sensors can detect objects through rain, fog or snow.

highways, while Ford's will be SAE Level 4, allowing it to self-drive in most, but not all, conditions.

"These technologies are already on the road," says NHTSA Director of Communications Bryan Thomas. "So the question isn't: When are autonomous vehicles coming? It's: What do we do about them since they're already here?"

JURISDICTIONS LEAD THE WAY

Since 2012, at least 34 states and the District of Columbia have considered autonomous vehicle legislation, with 10 jurisdictions passing such legislation.

Nevada was the first, authorizing the operation of autonomous vehicles in 2011, says Jude Hurin, administrator of the Management Services & Programs Division within the Nevada Department of Motor Vehicles. "The law required [the DMV] to create definitions for autonomous vehicles, a testing program, insurance requirements and a consumer deployment program," explains Hurin, who says the state's leadership on autonomous vehicles comes from the top. "Our governor is a high-tech governor who wants Nevada to be known not only for gambling and mining like it has been in the past, but also for cutting-edge technology. With that in mind, our goal has always been to bring forward new technology in a commonsense way that maximizes safety for consumers but minimizes red tape for industry."

Companies wishing to test autonomous vehicles on Nevada's roads must: allow vehicle operators to switch easily between 'autonomous' and 'manual' modes; pre-test their vehicles for at least 10,000 miles in a controlled environment; give their vehicles the ability to capture and store crash data for at least 30 seconds prior to a collision; deploy their vehicles with at least two occupants inside them, including one person who can manually operate the vehicle if necessary; display a designated red license plate on their vehicles; and supply a \$5 million bond or insurance policy.

IHS Automotive predicts that by 2035, there will be **21 MILLION** self-driving cars on the roads worldwide.

Although the DMV currently is issuing licenses only for testing autonomous vehicles, it already has regulations in place for publicly deploying them, too. Manufacturers wishing to sell autonomous vehicles must self-certify that their vehicles comply with minimum safety standards, while motorists wishing to purchase them must obtain a special driver's license endorsement and display a designated green license plate.

Its regulations mean Nevada will be ready to press 'play' on autonomous vehicles at the same time as industry.

AUTONOMOUS EVOLUTION

There are six levels of vehicle automation, according to SAE International, whose definitions have been adopted by the National Highway Traffic Safety Administration (NHTSA) as part of its Federal Automated Vehicles Policy. Level 2 systems already are on the market, and Level 3, 4 and 5 systems are expected to be commercialized in the next decade. "Industry isn't going to wait for ... national standards," Hurin says. "They're ready to start deploying now, and they're looking for states that are ready to work with them."

Other states that have indicated a willingness to work with industry include Florida, which was the first state to let companies test autonomous vehicles without backup operators inside them; Michigan, whose governor recently signed legislation allowing the sale of autonomous vehicles to consumers once they're ready, as well as driverless testing and the operation of autonomous taxi services; and California, which in 2012 became the second U.S. state to pass a law allowing testing of autonomous vehicles with human operators. The latter currently is drafting regulations that will allow for true driverless testing as well as public deployment of fully autonomous vehicles by 2018, according to 2016-2017 AAMVA Chair of the Board Jean Shiomoto, director of the California Department of Motor Vehicles.

"California has a lot of tech companies in Silicon Valley that employ the scientists and engineers who are evolving automated vehicle technology," Shiomoto says. "That has afforded us a really unique opportunity to be on the cutting edge of learning how the technology works and where it's going in the future."

Companies that want to test highly automated vehicles on public roads in California must seek a testing permit, demonstrate their ability to pay damages and pre-test their vehicles. Additionally, they must have certified drivers in their vehicles, maintain a driver training program and report any

SAE AUTOMATION LEVEL	DEFINITION
0: No Automation	The human driver does everything.
1: Driver Assistance	An automated system on the vehicle can sometimes assist the human driver in conducting some parts of the driving task, like steering or accelerating. Adaptive cruise control and lane-keeping systems are examples.
2: Partial Automation	An automated system on the vehicle can actually conduct some parts of the driving task, while the human continues to monitor the driving environment and performs the rest of the driving task. Examples include park-assist technology and Tesla's Autopilot system.
3: Conditional Automation	An automated system can both actually conduct some parts of the driving task and monitor the driving environment in some instances, but the human driver must be ready to take back control when the automated system requests.
4: High Automation	An automated system can conduct the driving task and monitor the driving environment, and the human need not take back control. But the automated system can operate only in certain environments (e.g., flat road) and under certain conditions (e.g., dry weather).
5: Full Automation	The automated system can perform all driving tasks, under all conditions that a human driver could perform them.

winter 2017

accidents involving their vehicles to the DMV, as well as any 'disengagements' (i.e., instances where the human driver needs to take over for the car).

"For us, the focus has been safety first," Shiomoto says. "We need to make sure the technology is safe before we put it on the road with consumers."

A NATIONAL FRAMEWORK

As jurisdictions like Nevada and California have been developing their autonomous vehicle strategies, the federal government also has been fine-tuning its approach, according to NHTSA, which in September 2016 issued a four-part Federal Automated Vehicles Policy. The first part outlines 15 voluntary safety areas that manufacturers must address prior to developing and deploying autonomous vehicles. The second part, known as the Model State Policy, delineates federal and state roles in the regulation of autonomous vehicles. Finally, the policy's third and fourth parts outline what existing authorities and tools NHTSA can bring to bear to regulate automated vehicles today, as well

"The question isn't: When are autonomous vehicles coming? It's: What do we do about them since they're already here?"

BRYAN THOMAS NHTSA Director of Communications as what new authorities and tools it might need in order to regulate them in the future.

"It's a pretty significant milestone, because some of these systems are on the road now," Beuse says. "This policy sets forth a framework for the country for how these vehicles should be tested and deployed." Because automated technology is evolving at breakneck speeds, NHTSA and its stakeholders—including AAMVA—will revisit and revise that framework on an annual basis. "It's very flexible to allow innovation to continue while at the same time making sure all the necessary stakeholders continue conversing with each other and raising potential issues," Beuse continues.

For jurisdictions, the most significant component of the Federal Automated Vehicles Policy is the Model State Policy. Developed in close collaboration with AAMVA's Autonomous Vehicle Best Practices Working Group, it reaffirms for autonomous vehicles the roles that state and federal governments have traditionally played with regard to motor vehicle regulation. It states that NHTSA will continue to regulate vehicle safety and equipment, while jurisdictions will retain their traditional responsibilities for vehicle licensing and registration, traffic laws and enforcement, and motor vehicle insurance and liability regimes.

Given their regulatory responsibilities, the policy supplies jurisdictions with a regulatory template that's designed to enable consistent regulations across state lines.

"The Model State Policy [seeks to build] a consistent national framework of state laws and regulations," Thomas explains. "Today, you can drive from Seattle to Miami and never worry about whether your vehicle is in compliance with different laws as you cross state lines. We want a similar dynamic to exist for operators with automated vehicles. Likewise, we want the developers of these technologies to be able to design to a single standard instead of 50 different standards."

"If states choose to regulate the testing of automated vehicles, following the Model State Policy can provide a path toward consistent regulation, which will help ensure that vehicles are tested safely while supporting research, development and innovation," adds AAMVA Director of Vehicle Programs Cathie Curtis.

STEERING SUCCESS

Whether they leverage the Model State Policy or build their own policy from scratch, the best approach for jurisdictions to take toward regulating autonomous vehicles is the collaborative kind.

"We started by meeting with different manufacturers. We visited their offices and test labs in Silicon Valley, we met with their developers, and we rode in their vehicles to learn firsthand how the technology works," Shiomoto says of California. "It took a lot of boots on the ground, pounding of the pavement and just having really good discussions about what the technology can do and where it's going in the future."

Hurin, who is vice chair of AAMVA's Autonomous Vehicle Best Practices Working Group, echoes: "In Nevada, we thrive upon our partnerships with industry. We're the first to admit that we don't know everything, so it's important that we sit down with all stakeholders to identify what the issues are and build regulations together if they're needed."

That collaborative spirit should extend not only to industry, but also to legislators, adjacent state agencies, law enforcement, insurance companies and other stakeholders, according to Shiomoto, who says jurisdictions such as California, Nevada and Pennsylvania have taken a steering-committee approach to identifying and addressing autonomous vehicle needs and requirements. California's steering committee, for example, includes representatives from NHTSA, as well as state agencies like the California Highway Patrol, the California Department of Transportation, the California State Transportation Agency and the Department of Insurance, all of which meet regularly to share information, ideas and concerns.

"You need to make sure everybody is aware of what the future holds and prepare for that

AAMVA IS AUTOMATION-READY

Jurisdictions crafting their approach to automated vehicle testing and deployment can count on AAMVA for resource documents and guidance at every step, according to Director of Vehicle Programs Cathie Curtis, who says the association has been collaborating closely with state and federal stakeholders—including the National Highway Traffic Safety Administration (NHTSA)—to develop guidance for the jurisdictions that promote both safety and innovation.

"At AAMVA, we're helping our members become more familiar with automation in vehicles by meeting with stakeholders, holding conference calls with our Autonomous Vehicle Information Sharing Group, continuously adding to the Autonomous Vehicle Information Library on our website and providing guidance for the regulation of autonomous vehicles with NHTSA through our Autonomous Vehicle Best Practices Working Group," reports Curtis.

Curtis concludes, "AAMVA sees its role as helping jurisdictions to understand and prepare for automated vehicle technology, so we're making sure we provide our members with opportunities to learn, engage with stakeholders and receive assistance in whatever direction they choose to take with allowing the testing and deployment of automated vehicles on their roadways."

collectively as a state," advises Shiomoto, who recommends sharing information not only across agencies, but also across state and even national borders. "There are a lot of resources out there that you can take advantage of; you don't have to do this on your own."

DESTINATION: SAFETY

Will 'drivers' of self-driving cars still need a driver's license? How will insurance companies write policies for people who aren't actually driving? When an autonomous vehicle commits a traffic violation, will law enforcement issue a ticket to its passenger or to its manufacturer? What about 'connected' vehicles, which will leverage sensor networks to steer around obstacles? What standards will they use to communicate securely with other vehicles and infrastructure?

Clearly, questions still outnumber answers. Establishing policies and partnerships now, however, will make jurisdictions more nimble later. The future they'll usher in as a result won't just be 'cool' or 'convenient,' according to NHTSA. It also will be safe.

"Ninety-four percent of crashes in the United States can be tied back to human choice or human error," concludes Thomas, who says there were 35,092 deaths on U.S. roadways in 2015 alone. "That's a huge, huge number of crashes that could be prevented with autonomous vehicles, which is why we all have to work hard to accelerate the adoption of [this] technology." **m**

find out more \equiv

FOR MORE INFORMATION, VISIT AAMVA'S AUTONOMOUS VEHICLE INFORMATION LIBRARY AT AAMVA.ORG/ AUTONOMOUS-VEHICLE-INFORMATION-LIBRARY.

HOW RECREATIONAL MARIJUANA IS CHALLENGING DRUGGED DRIVING ENFORCEMENT

BY ELIZABETH MILLARD

Ithough most of last November's U.S. election focus was on the presidential race, a less-publicized shift is likely to have significant repercussions for several states in the near future: legalized recreational marijuana.

Colorado became the first state to legalize the drug in 2012, and since then, Washington, Oregon, the District of Columbia and Alaska have voted for legalization. This past November, four more states—California, Massachusetts, Nevada and Maine—also legalized recreational use. One state, Arizona, had legalization on the ballot, but voters opted against it.

When *MOVE* first covered this issue in 2014, Colorado was still adjusting to the law and determining the most effective ways to provide training for law enforcement and implement public education efforts about the dangers of drugged driving.

With two more years of experience, both Colorado and Washington have numerous lessons to share with those states that have just voted to legalize. The challenges both states have faced in the past few years are likely to be felt across any jurisdiction that has to deal with recreational marijuana use—and that includes states that border one where marijuana is legal.

"Drugged driving is a national issue," says Brian Ursino, director of Law Enforcement at AAMVA. "It's one that we need to address in terms of standardizing testing, enforcement, training and other strategies. In many ways, where we are with marijuana now is where we were with alcohol 30 years ago."

The Pacific Institute for Research and Evaluation conducted a voluntary roadside survey both before and after legalization in both Colorado and Washington, providing some insight into the effects of the shift. Since legalization, Colorado's traffic deaths have increased by 48 percent. Marijuana-related ER visits have surged 49 percent, and calls to poison control are up 100 percent since before legalization. In Washington, legalized recreational marijuana began in July 2014. Prior to that date, about 14 percent of drivers tested positive for marijuana use, but now that number has jumped to 21 percent.

MAJOR CHALLENGES

As states like Colorado and Washington have adjusted to the new normal, the challenges they've faced are instructive for other states that have more recently legalized marijuana use, or those considering legalization in the future.

For example, there isn't a national standard for what constitutes 'being high.' Some states have set 5 nanograms of Delta-9 THC (the drug's intoxicating ingredient) in a driver's system as the presumptive level of impairment, but many believe there's not enough science to validate that number. Also, Washington's fatal crash data reveals there have been many marijuana-involved crashes in which drivers had levels well below 5 nanograms. There simply isn't enough data right now to create a national standard like the one used for determining alcohol overconsumption, Ursino says. Although Colorado has the most data collection at this point—and plans to release some major numbers in 2017 there's still a struggle with tracking data effectively.

Data can get even trickier when other drugs and alcohol are factored into the equation—and it's increasingly prevalent that they are, according to Erin Holmes, director of Traffic Safety at the Foundation for Advancing Alcohol Responsibility.

Referred to as 'polysubstance' situations, these are incidents in which a driver has ingested marijuana and also

had alcohol or other drugs like opioids. The biggest problem, Holmes says, is that each individual will metabolize multiple substances in different ways. Also, it's common for one substance to heighten the effects of another.

"When you have alcohol and marijuana, it's not one plus one equals two," says Holmes. "It might enhance the effects of both, so now you're dealing with one plus one equals three. And people taking these substances might not know that."

Whether there are polysubstance issues involved or just marijuana, either situation brings up another significant challenge: adequate testing. THC can only be measured through a blood draw, not through a breathalyzer. In any state, getting blood requires a court order—and that takes time, especially in the middle of the night when a trooper might have pulled over someone who seems impaired.

As that process unfolds, THC is dissipating rapidly. By the time a suspected user is brought to the hospital for a blood draw, it's likely that it's hours after the traffic stop. By that time, THC levels will be significantly lower and possibly at a permissible level, notes Major Steve Garcia, who heads the Training Services Branch of the Colorado State Patrol.

STEPS FORWARD

Although recreational marijuana use creates all of those challenges for law enforcement, regulators, legislators and motor vehicle administrators, there has been progress made as well.

In Colorado, significant resources are being put into assessing three different devices that would use oral fluid—also known as spit—rather than blood for determining a person's THC level. Garcia would like to see a breathalyzer/oral fluid combination device, since people provide a certain level of spit when using a breathalyzer anyway.

Colorado is currently testing the devices by comparing oral fluid results with subsequent blood draw results. With enough data, law enforcement would be able to present the case for new devices to the legislature. From there, a law change could

GREEN ACRES

With a total of nine jurisdictions where recreational marijuana use is legal and another 19 that allow marijuana usage for medical reasons—developing a national standard for what constitutes 'being high' and how to measure it quickly and effectively are key to being able to enforce drugged driving laws.

make oral fluid results admissible in court, Garcia notes.

"Best of all, that may speed up the process in other states," he adds. "Ideally, getting to a national standard would be helpful as more and more states consider legalization."

Also looking to shorten the time frame for getting blood draws, Washington is piloting a program for getting warrants electronically, and initial tests in Spokane are going well, says Chief John Batiste of the Washington State Patrol.

"We're cutting time out of the process, and that's incredibly important for getting an accurate reading of how impaired a driver might be at the time of the traffic stop," he says. The agency is trying to obtain grant funds that will allow law enforcement to roll out electronic warrants statewide.

The other strategy that's gaining traction for handling drugged driving is trainingspecifically, more emphasis on Advanced Roadside Impaired Driving Enforcement (ARIDE), a program developed by the National Highway Traffic Safety Administration (NHTSA) with input from groups like the International Association of Chiefs of Police. ARIDE was created to address the intermediate gap in training between the Standardized Field Sobriety Testing and the far more advanced Drug Evaluation and Classification program.

Colorado trains every trooper in ARIDE, Garcia says, and has made strides toward making the training a standard. "We want every single officer to determine whether or not a person is under the influence of drugs as well as alcohol," he notes. With marijuana, that type of determination can be challenging, since a user could be less likely to exhibit classic signs of intoxication, which makes training even more vital.

SHARED LESSONS

With an awareness of what's working, what may work in the future and what's still a challenge, states that have recently legalized recreational marijuana use can begin to face the situation more effectively.

Batiste adds that newly legalized states should look for the same level of testing, laws and legislative support as they've seen with alcohol. "There needs to be a high level of communication between a state legislature and law enforcement on this issue," he advises.

Rolling out training now—rather than when marijuana is available—is another major step worth taking, says Holmes. Training like ARIDE can prepare officers and others in advance. For example, according to Chief James Epperson of the California Highway Patrol, legalization there was immediate but the regulations for use are not required to be adopted until Jan. 1, 2018. But that doesn't mean officers will be waiting until that date to begin

Since mariiuana was legalized in 2012. traffic deaths in Colorado have increased by 48 PERCENT. Marijuanarelated ER visits are up 49 PERCENT since before legalization. and calls to poison control are up 100 PERCENT.

training about drugged driving identification and apprehension.

Fortunately, California's statute articulates specific requirements for training and research efforts, Epperson says. This supplies the funds necessary for law enforcement and data scientists to begin working before that crucial start date.

Another step that states may want to consider is to engage in discussions about public safety with those who are selling recreational marijuana, suggests Garcia. Similar to talking with bar owners about intoxicated patrons, purveyors of smokable and edible marijuana should be informed about how they can prevent drugged driving, he says.

"Nobody wants more crashes and fatalities, and that includes the people [growing] and selling marijuana," says Garcia. "For the first six months of legalization, we fought the change. And, honestly, we lost time because of that. Because when you accept that it's happening, you can open up a dialogue with industry and treat them like a partner. We all have to work together on this." m

find out more =

SEE HOW MUCH WE'VE LEARNED ABOUT DRUGGED DRIVING ENFORCEMENT IN THE LAST COUPLE OF YEARS. VISIT MOVEMAG. ORG AND READ "HIGH ROAD," AN ARTICLE ABOUT THIS SAME TOPIC THAT WAS PUBLISHED IN THE FALL 2014 ISSUE OF *MOVE*.

WE HAVE A VISION TO ELIMINATE PREVENTABLE DEATHS IN OUR LIFETIME. ... THE ONLY ACCEPTABLE NUMBER IS ZERO.

O & A WITH **Debbie Hersman**

MOVE CATCHES UP WITH THE PRESIDENT AND CEO OF THE NATIONAL SAFETY COUNCIL INTERVIEW BY BRITTANY MAGEE

pehind the wheel

Q WHAT LED TO YOUR CAREER/ INTEREST IN TRANSPORTATION?

I grew up as the daughter of an Air Force test pilot/fighter pilot and soloed in a Piper Tomahawk before I got my driver's license. In a sense, transportation was part of my life without me even being conscious of it. My first job out of college was working for West Virginia Rep. Bob Wise, who was a senior member of the House Transportation Committee.

My first experience with transportation safety policy was as a result of a train collision. The emergency exits on the train were not easy for passengers to use, nor were they accessible to emergency workers, and there weren't enough of them. I worked on legislation that led to critical design changes to improve emergency access for all rail passenger cars. YOU PREVIOUSLY SERVED AS A BOARD MEMBER AND THEN CHAIRMAN OF THE NATIONAL TRANSPORTA-TION SAFETY BOARD (NTSB). WHAT WAS A HIGHLIGHT OF YOUR WORK THERE?

At NTSB, I saw tragic events that were often the worst day of someone's life. However, the real purpose of the independent agency was to spare others from a similar fate. Each investigation was a kind of puzzle, and solving it meant lives would be saved. During my 10 years at NTSB, I saw regulations and laws change, equipment modified and behaviors adapt as a result of NTSB's recommendations.

I worked alongside dedicated public servants who brought curiosity, professionalism and empathy to painful work. They taught me the importance of asking the right questions and leaving no stone unturned when things don't go as planned.

Q WHAT EVENTUALLY LED YOU TO THE NATIONAL SAFETY COUNCIL (NSC)?

Joining NSC was an opportunity I couldn't pass up. I had the chance to continue saving lives not just in transportation, but also in workplaces, homes and communities. Like NTSB, NSC is data driven, nonpartisan and advocates for safety. It was a natural next step for me.

Each one of us has the opportunity to leave this world a better place, and I'm fortunate that my work at NSC allows me to do just that. I love what I do, and even with difficult situations or long hours, my work fulfills me.

FAST FACTS ==

Debbie Hersman

EDUCATION Bachelor of Arts in Political Science and International Studies, Virginia Tech University; and a Master of Science in Conflict Analysis and Resolution, George Mason University

DREAM CAR One that would keep Debbie, her family and everyone else on the road safe

FAVORITE MOVIE The Shawshank Redemption

PRESIDENT & CEO OF NSC?

This year, NSC announced our 'moonshot'—we have a vision to eliminate preventable deaths in our lifetime. Currently, we lose nearly 140,000 people every year, or one person every four minutes, to things that many people call 'accidents,' like car crashes, fires, drowning and overdoses, but each one is preventable. The only acceptable number is zero.

NSC has a vision of keeping each other safe at work, at

home and on the road. We accomplish this by partnering with organizations like AAMVA and its members who share our mission and are dedicated to saving lives.

TWO OF NSC'S TOP FIVE SAFETY ISSUES ARE DISTRACTED DRIV-ING AND TEEN DRIVING SAFETY. WHAT STEPS IS NSC TAKING TO COMBAT THESE ISSUES?

Distraction continues to be a leading cause of crashes, and

lan Grossman (left), Debbie Hersman (center) and Jean Shiomoto (right) were in attendance at the Road to Zero launch event in October 2016.

teens comprise our riskiest cohort of drivers. NSC focuses on education and legislation because we know they are two critical elements of behavior change. We observe Distracted Driving Awareness Month each April, and we oversee DriveitHOME.org, which is a one-stop shop for parents with teen drivers. We also advocate for total bans on cell phone use-including hands-free-for all drivers, and we support strengthening teen driver laws that put checks and balances on what teens are exposed to while they are learning to operate a motor vehicle.

THE BIG OUESTION

WHAT HAS BEEN THE BEST PART ABOUT COLLABORATING WITH AAMVA AND ITS MEMBERS?

From AAMVA's engaged and approachable CEO, Anne Ferro, to the people working in the Secretary of State's office down the road from me in Schaumburg, Illinois, AAMVA is an invaluable partner in many ways. The Iowa DMV was the first to promote our *MyCarDoesWhat* campaign, while Ian Grossman, AAMVA's VP of Member Services and Public Affairs, serves on the Steering Group of the Road to Zero campaign. We could not be more thankful to AAMVA for its commitment to safety.

TRANSPORTATION (DOT), ANNOUNCED THE ROAD TO ZERO INITIATIVE THIS PAST OCTOBER. WHAT ARE THE MAIN GOALS FOR THIS EFFORT?

AAMVA is helping guide the Road to Zero initiative, which is focused on three things:

1. Awarding \$1 million per year in grants to nonprofit organizations focused on innovative approaches to eliminating highway fatalities.

2. Developing a future scenario with dozens of stakeholders that articulates how the United States can get to ZERO fatalities in 30 years.

3. Creating a roadmap for policymakers, which includes the most important actions to help us get to ZERO. **m**

Getting Ready for Smarter Cars

A LOOK AT THE LATEST ADVANCES IN AUTOMATED VEHICLE TECHNOLOGY

BREAKING DOWN THE LEVELS OF AUTOMATED DRIVING

CHRIS MULLEN, DIRECTOR, TECHNOLOGY RESEARCH DIVISION, STATE FARM

he Society of Automotive Engineers (SAE International) has established six levels of driving automation (SAE standard J3016), which the National Highway Traffic Safety Administration (NHTSA) has also adopted. Let me break them down for you.

SAE Levels are based on how much of the driving task is performed by the vehicle versus the human, based on control of speed/steering, monitoring of the environment and readiness to take over.

Level 0 is no automation; full human control. You're talking about a vehicle that has no automated function, only the ability to enhance driver actions. It might still have assist features like cruise control, but it can't monitor nor respond to outside events (like a stopped vehicle ahead) without human intervention.

Level 1 introduces driver assistance systems. When you use a driver assistance system like adaptive cruise control (ACC), the technology maintains the set speed and distance from the car ahead of you instead of the driver, so you don't need to worry about slowing down if the car ahead

We don't want people thinking the vehicle can do more than it actually can. Right now, humans need to be ready to take over. of you slows down (within the capabilities of the system). These assistance systems can also include active safety systems, like automatic emergency braking (AEB), which can detect when you need to brake and even brake for you.

Level 2 is partial automation, which gives the vehicle responsibility for more advanced tasks but requires a human to always be monitoring and in control. An example of this is adaptive cruise control combined with a lane-keeping assist system. The technology will automatically adjust your speed as well as keep you in the designated lane. However, the systems have some dependencies; for example, they rely on lane markings and can't function if there aren't any, so the human must remain in control.

Level 3 is conditional automation. This increases the responsibilities of the vehicle for execution and monitoring. Under certain conditions, the car is functioning in an automated way and almost has full control. It's like an aircraft autopilot, controlling your speed and steering, keeping you in your lane, monitoring your blind spots and traveling a navigated route. However, these systems still have some dependencies (like needing lane lines); therefore, the driver needs to be ready to take over at all times if the conditions aren't conducive to the technology functioning properly.

In levels 4 (high automation) and 5 (full automation), the vehicle has complete control and the human is not responsible for the trip. The differentiator between levels 4 and 5 is that level 4 vehicles can only operate in certain design conditions, like a limited-access highway corridor or closed campus. Level 5 vehicles could operate anywhere.

Almost everyone immersed in the autonomous vehicle field agrees that this is going to be an iterative implementation of technology. Even when the technology is fully ready, there are going to be places that aren't going to have the necessary infrastructure for level 5 vehicles to operate, from a safety perspective or otherwise.

The potential of these systems to enhance safety is providing the industry with critical motivation. There have been a number of studies, including many conducted by the Insurance Institute for Highway Safety (IIHS), that show the effectiveness of active safety systems in reducing the frequency and severity of insurance claims. As a result, because systems like AEB show so much promise and we have the data to show the effectiveness, manufacturers have come together and committed to standardization.

One of the biggest challenges for the implementation of automated driving systems on our roadways is that we need customers to feel comfortable with the technology and understand it. There's the danger of people being so in awe of the incredible abilities of a level 2 or 3 vehicle, for example, that they may think the vehicle is more capable than it is. We don't want people thinking the vehicle can do more than it actually can. Right now, humans need to be ready to take over. It's important that we keep the public educated so they understand the technology as it evolves.

AUTOMATED VEHICLES IN PENNSYLVANIA

KURT MYERS. DEPUTY SECRETARY FOR DRIVER AND VEHICLE SERVICES, PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

echnology is changing the world every day, and there are few places where that change is more evident than inside an automobile. We are closer to the possibility of fully automated vehicles than we have ever been. Before these vehicles can travel on our highways, however, they need to be thoroughly and safely tested. Pennsylvania has become a hub of innovation related to highly automated vehicle (HAV) technology. Pennsylvania is home to acclaimed institutes of higher learning, such as Carnegie Mellon University and the University of Pennsylvania, that have been trailblazers in automated vehicle research. Pennsylvania has a varied topography and weather patterns, making real-world HAV operation attractive to entities that

want to test their technology. This fact, combined with the academic resources there. has created a fertile testing ground for automated vehicles by companies such as Uber.

Recognizing PennDOT's role as the lead agency in the commonwealth, we established an Autonomous Vehicle Policy Task Force, which began meeting in June 2016. The task force has a clear goal: to develop policies to expand the testing of automated technology in Pennsylvania while ensuring public safety.

The task force comprises industry leaders, academic experts and constituent representative groups from both the public and private sectors. The task force focuses on the following areas: setting minimum approval criteria for testing, vehicle characteristics and capabilities, the

conditions under which testing can occur, data collection, testing approval and renewal, and the question of "Who is the driver?" The task force has utilized the recently released National Highway Traffic Safety Administration (NHTSA) automated vehicle policy guidance document especially as it relates to the Model State Policy—as a framework for addressing areas of concern (notably on-road testing).

Recently, the task force submitted its draft policy recommendations to Secretary of Transportation Leslie Richards. Understanding that regulations, by design, are a slow process, PennDOT identified early in the process that establishing policies would offer the maximum amount of flexibility in addressing the rapidly changing HAV technology advances. Working in collaboration with the Pennsylvania legislature, SB 1412 was introduced. The legislation, when enacted, will enable PennDOT to implement identified policies for HAV testing programs. The legislation is being refined by the General Assembly in consultation with the task force.

PennDOT held a webinar in December 2016 to collect public comments related to the proposed policies. The recording of the webinar is available at **PENNDOT.GOV**.

A ROAD TO RELIABLE TRANSPORTATION

RAFFI KRIKORIAN, SENIOR ENGINEERING DIRECTOR OF SOFTWARE FOR UBER'S ADVANCED TECHNOLOGIES GROUP

Self-driving technology is an extension of Uber's mission to provide transportation that's as reliable as running water everywhere, for everyone. We set out in 2010 to solve a simple problem: How do you get a ride at the touch of a button? At the time, the idea was unthinkable. Nearly seven years and over two billion trips later, it's a reality in more than 460 cities in over 70 countries around the world.

Almost two years ago, we launched our Advanced Technologies Group in Pittsburgh with a goal of creating our Self-Driving Ubers, which made their debut this past September in the Steel City. This pilot is a big step forward. Real-world testing on Pittsburgh's challenging roads in its varied weather is critical to our success. We're pleased with the city's enthusiastic reception to our pilot, as well as the progress we've made since launching.

We can imagine how this technology could further extend the mobility benefits people already enjoy thanks to ridesharing. By getting more people into fewer cars, we can help reduce congestion and pollution over time. In Los Angeles, UberPOOL reduced the number of miles driven by 7.9 million, and the amount of carbon dioxide emitted by 1,400 cubic tons in its first seven months.

We've also seen how Uber increases mobility for everyone, particularly for people living in underserved areas. Take Manhattan, where 35 percent of

Self-Driving Ubers are being tested on the roads of Pittsburgh. During testing, there is a safety driver in the front seat because the vehicles require human intervention in many conditions, including bad weather.

all Uber pickups happen outside of the borough, compared to just 6 percent by traditional yellow taxis.

But nothing is more inspiring than the tremendous potential self-driving technology holds to improve road safety. Today, 1.3 million people around the world die in car crashes every year. Ninety-four percent of those crashes involve human error. This is a tragedy innovation can help solve.

A better future is within reach. We have the technology. While it won't happen overnight, self-driving will be an important part of the future of transportation. **m**

AMERICAN ASSOCIATION OF MOTOR VEHICLE ADMINISTRATORS

safe drivers safe vehicles secure identities saving lives!

Back to the Future

A RECAP OF KEY TAKEAWAYS FROM AAMVA'S WINTER BOARD MEETING

appy New Year to everyone! It was great to convene the AAMVA Winter Board Meeting in Orlando, Florida, in January. I provided the Chair's update on my travels from the AAMVA Standing Committee meetings in Reston, Virginia, to attending the CCMTA Board Meeting in Ottawa, Ontario, Canada, to attending the Region II planning meeting in Chattanooga, Tennessee, and the Region IV planning meeting in Seattle. We also heard from AAMVA CEO Anne Ferro on her travels while representing AAMVA at various engagements these past few months.

We covered a great deal of business at the Winter Board Meeting, but one activity stood out for me. I want to share with you the 'futures' discussion the Board participated in, led by a facilitator to keep us on track. First off, we had homework coming in to the activity: reading materials on Driving the Future: Understanding the New Automotive Consumer; Five Megatrends and Possible Implications; and the Sharing Economy. The facilitator had us start by drawing a picture of our first car with the make, model, color and year. There were many interesting drawings, but we all need to keep our day jobs as none of us are 'Picasso' artists! Then we shared what the car meant to us and what it did for us. This brought back many interesting memories.

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And then you fast-forward to the car you own today, and you can't help but think about how cars are changing and that transportation is evolving, too.

Another exercise called 'visual exploration' had the Board of Directors walk around and look at 50 photos, which varied in scenes and had no particular meaning except to stimulate one's imagination! The board members were to find two photos that spoke to them or helped express their thoughts and feelings about the future of their organizations. We heard amazing reflections on how the photos depicted the future for our respective organizations. One description that stood out vividly to me was one board member's reflection of what a basket of red tomatoes meant. The board member shared that the basket of red tomatoes showed an organization ripe for change. When people say a picture is worth a thousand words, how apropos, as each board member expressed his or her views of the future from a theoretical perspective.

The feedback I received from the board members was that the required reading was very stimulating, and the discussions we had on the 'future' were discussions that many said they were going to continue with their management teams back in their own jurisdictions.

As we tend to the daily operations of our organizations or businesses, we all need to think about the future, too. We are seeing many partnerships in the motor vehicle world—with stakeholders and between automotive and technology brands—from which consumers will benefit. What are the current industry trends, and what is the future market for transportation services? How will they affect our organizations and businesses? Let's start the discussion now! **m**

Jean Shiomoto, 2016–2017 AAMVA Chair of the Board

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