

State-Level Autonomous Vehicle Involvement

Governor's Advisory Council
on Connected and Autonomous Vehicles

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Don Hannon
Transportation Policy Consultant
Council of State Governments/Eastern Regional Conference

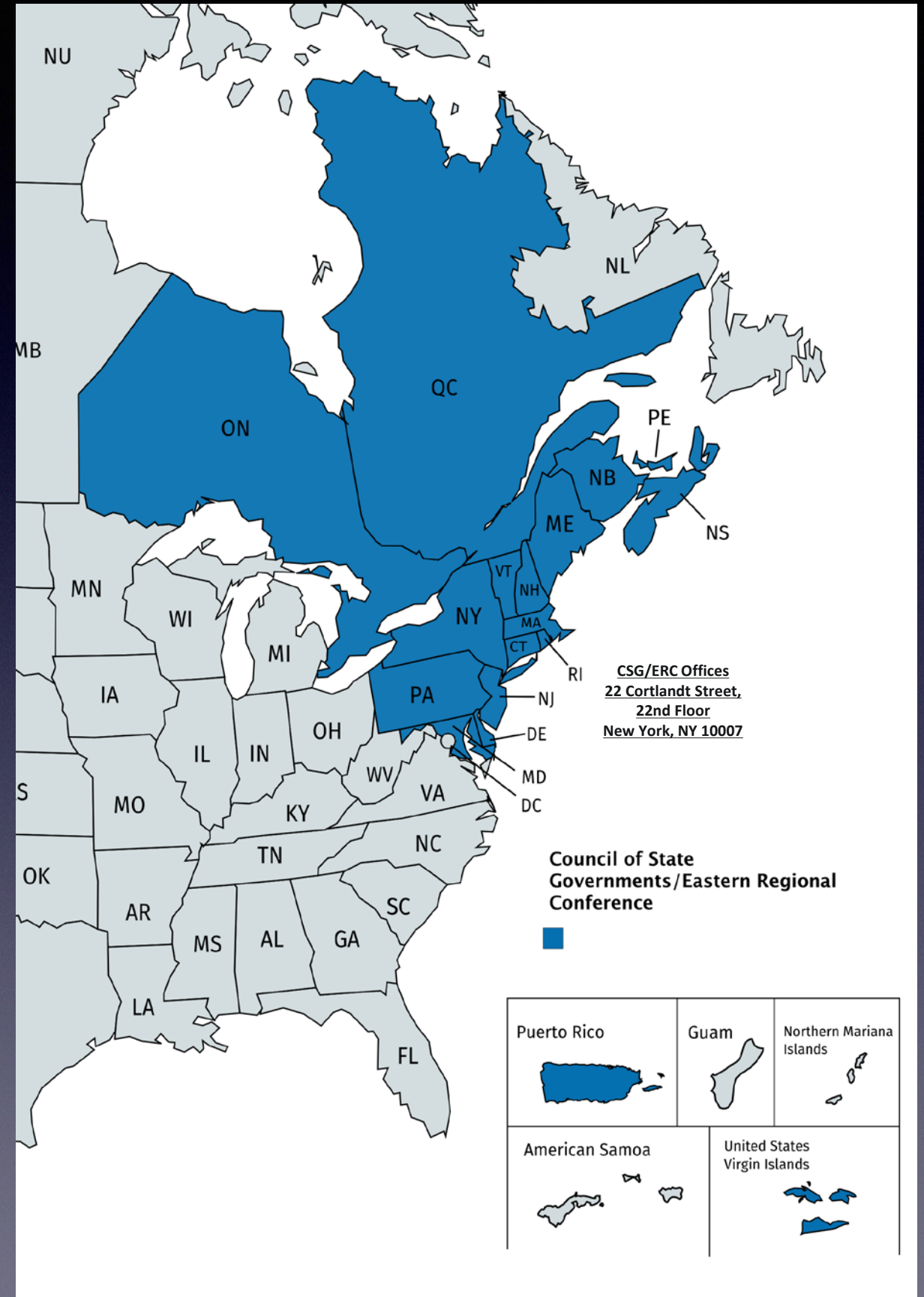















Council of State Governments - Eastern Regional Conference

Since 1937 CSG/ERC has helped facilitate the exchange of ideas among state policy makers, business leaders and the academic community in our 18 member jurisdictions. These jurisdictions include the 11 northeastern states, from Maine to Maryland, Puerto Rico, the U.S. Virgin Islands, and the Eastern Canadian Provinces of Quebec, New Brunswick, Ontario, Nova Scotia, and Prince Edward Island.

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NHTSA Levels of Automation

	0 No Automation The absence of any assistive features such as adaptive cruise control.	1 Driver Assistance Systems that help drivers maintain speed or stay in lane but leave the driver in control.	2 Partial Automation The combination of automatic speed and steering con- trol—for example, cruise control and lane keeping.	3 Conditional Automation Automated sys- tems that drive and monitor the envi- ronment but rely on a human driver for backup.	4 High Automation Automated systems that do every- thing—no human backup required— but only in limited circumstances.	5 Full Automation The true electronic chauffeur: retains full vehicle control, needs no human backup and drives in all conditions.
Who steers, accelerates and decelerates	 Human driver	 Human driver and system	 System	 System	 System	 System
Who monitors the driving environment	 Human driver	 Human driver	 Human driver	 System	 System	 System
Who takes control when something goes wrong	 Human driver	 Human driver	 Human driver	 Human driver	 System	 System
How much driving, overall, is assisted or automated	 None	 Some driving modes	 Some driving modes	 Some driving modes	 Some driving modes	 All driving modes

Federal/State Roles

Federal Government – Focus is on the Car - Sets regulations such as mandating safety equipment and testing crash-worthiness of new vehicles

State Government – Focus is on the Driver - Manage after-sale rules regarding registration, licensing, insurance, driver behavior (set and enforce speed limits) and safety inspection

Autonomous Vehicles – Issue is you're combining the car and the driver

NHTSA Levels of Automation

	0	1	2	3	4	5
	No Automation	Driver Assistance	Partial Automation	Conditional Automation	High Automation	Full Automation
	The absence of any assistive features such as adaptive cruise control.	Systems that help drivers maintain speed or stay in lane but leave the driver in control.	The combination of automatic speed and steering control—for example, cruise control and lane keeping.	Automated systems that drive and monitor the environment but rely on a human driver for backup.	Automated systems that do everything—no human backup required—but only in limited circumstances.	The true electronic chauffeur; retains full vehicle control, needs no human backup and drives in all conditions.
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Brief History of State Involvement

- 2010 – Google reveals it has covered more than 100,000 miles testing its early AVs in California – no regulations against AVs on public roads
- 2011 – Nevada becomes the first state to legalize the operation of AVs followed by Florida
- 2012 – California (the home state of Google/Alphabet/Waymo) enacts law requiring a human driver behind the wheel, a steering wheel, gas/brake pedals, and an AV permit [Florida and Arizona do not require permits]
- 2015 – Arizona Governor signs Executive Order directing various state agencies to “undertake any necessary steps to support the testing and operation of self-driving vehicles on public roads” in the state.

Brief History of State Involvement

- 2016 – Florida and then Michigan expand regulations to allow AVs to operate without a driver
- 2018 – California allows an AV to operate without a person inside if remote operations is provided as a backup – Why? Companies were moving large deployments of AVs out of the state.
- Since 2011, 41 states have considered legislation to allow AVs on the road, 29 states and DC have passed legislation, and governors in 10 states have issued executive orders regulating AVs.

Where are the Feds?

- 2010 – 2016 - AV industry and advocates have sought federal legislation to avoid a patchwork of state laws
- January 2016 – Obama Administration released a series of voluntary AV guidelines, including submitting testing and deployment plans to USDOT
- September 2017 – USDOT Secretary Chao releases “AV 2.0” – updated version of original federal AV guidelines removing some previous restrictions – e.g., AV developers “do not need to wait to test or deploy” their technology on public roads
- August/September 2018? – USDOT expected to release “AV 3.0” guidance

U.S. Congress

House: SELF DRIVE Act (Safely Ensuring Lives
Future Development and Research in Vehicle
Evolution)

Senate: AV START Act (American Vision for Safer
Transportation through Advancement of
Revolutionary Technologies)

States with Significant Activity

- California
- Arizona
- Florida
- Michigan

“Let’s let (the other states) solve some of the problems first, but we need to be at the table, and that’s right where we are.”

–Brian Ness, Idaho Transportation Department Director, speaking in January 2018 before the Idaho Autonomous and Connected Vehicle Testing and Deployment Committee

Northeast States

- 11 States in CSG/ERC Region
- 4 Without any Enacted Legislation or Executive Order (NJ, NH, RI, MD)
- 2 With Existing Executive Order (MA, DE)
- 1 With both Enacted Legislation and an Executive Order (ME)
- 4 With Enacted Legislation (VT, CT, NY, PA)

New Jersey

- Current 2018 session two bills pending in Senate Committees – 1) Clarifies that owners of AVs must comply with existing insurance requirements, and 2) Permits testing and use of autonomous vehicles on State roadways under certain conditions.

New Hampshire

- HB 314 (2018) Bill to allow AV testing, applicants would have to provide dates and locations of testing, and put up a \$10m insurance or surety bond. Test vehicles would have to be accompanied by escort vehicles. Passed in the House prior to March Tempe accident.
- Senate picked it up in April and was amended to only create AV and Connected Vehicle Testing and Deployment Commission.
- Conference committee convened and agreed to combine House and Senate versions and added \$500 “AV testing license”

Rhode Island

- The Rhode Island Department of Transportation is accepting proposals for a public-private partnership pilot program that would result in the operation of a low speed, driver-assisted, autonomous shuttle in an area of Providence currently underserved by transit.
- “It’s not just a pilot to see how the thing works,” said RIDOT Director Peter Alviti. “It’s a pilot to see how it’s going to change our transportation, our economy and our social structure.”

Maryland

- Limited engagement
- In February the State issued its first testing permit to a tech firm which allows for testing in two Maryland DOT parking lots.
- Established new Maryland Transportation Institute based at University of Maryland, College Park, with \$20m annual funding to include connected and automated transportation among other emerging issues.

Massachusetts

- October 2016 – Governor Baker signed an executive order creating a working group on AVs that will: 1) Work with experts on vehicle safety and automation, 2) Work with members of the legislature on proposed legislation, and 3) Support agreements that AV companies will enter with the State DOT, municipalities, and state agencies
- Holding series of five public listening sessions exploring transportation issues including AVs.

Maine

- 2017 Bill authorized municipalities to enter into Memorandum of Agreement with several state agencies to develop, test and operate pilot programs for the use of AVs for public transportation until March, 2022.
- January 2018 – Governor LePage signed an executive order establishing the Maine Highly Automated Vehicles Advisory Committee
- Maine DOT spokesperson noted that this EO is consistent with NHTSA guidance, which calls on states to consider and coordinate the complex aspects of AV testing and deployment in advance of legislative action.

Vermont

- Enacted 2017 Transportation Bill directs the “...Secretary of Transportation to convene a meeting of public and private stakeholders...to gather information related to and raise awareness of opportunities and challenges related to AVs, and **identify policy areas** requiring further research or possible legislation.”
- Avoid patchwork of non-consistent regulations,
- Ensure safe deployment of new technology
- Avoid delaying deployment of lifesaving technology
- Make sure Vermont is positioned to take advantage of new technologies – “let’s not fall behind”

Connecticut

- The state is now officially moving forward with an autonomous vehicle testing pilot program created by legislation the Governor signed in 2017.
- Cities and towns that are interested in allowing the testing of fully autonomous vehicles on their roadways would submit applications to the state.
- Up to four municipalities to be chosen to participate and enter into agreements with autonomous vehicle testers.

New York

- AVs are nowhere to be found on the streets of the Empire State despite legislation enacted in 2017 and renewed through April 2019 to allow testing on public roads.
- The law authorizes the Commissioner of Motor Vehicles to issue permits for autonomous vehicle testing and demonstration... *but* ...only if testing is approved by the Superintendent of the State Police and **requires a state police escort at all times.**

Pennsylvania

- Pittsburgh – Site of several technology companies and active “public street testing” of AVs
- Established AV Testing Policy Task Force that provided draft policy guidelines and recommendations to Legislature in Nov. 2016
- Actively engaged with federal and state agencies, automobile manufacturers, the tech industry, and research institutions.
- Allows the use of allocated funds, up to \$40,000,000, for intelligent transportation system applications, such as autonomous and connected vehicle-related technology.

Pennsylvania

- Following the March accidents in AZ and CA PennDOT announced a plan to establish stepped-up safety oversight of AVs including implementing interim oversight policies while awaiting legislative action for permanent authorization
- Convened PA Automated Vehicle Summit in Pittsburgh in April
- PennDOT seeking both voluntary compliance and legislative authority to oversee AV testing in the State with extensive list of testing compliance policies

Common Issues Addressed by States in Legislation and Executive Order

- Should an operator be physically present (and in driver's seat) and ready to take over during testing?
- Should special rules be developed to ensure safe testing and operation?
- Should there be special training and certifications required for operators of AVs?
- How to regulate conversion of conventional vehicles into autonomous vehicles. Limit to recent models? How to address the liability of the original manufacturer of a converted vehicle.

Common Issues Addressed by States in Legislation and Executive Order

- Should hand-held devices be allowed for use in a legally operating autonomous vehicle?
- Should local governments be able to ban AVs on local roads?
- Should states identify Autonomous Vehicle Corridors?

WHAT IS IMPORTANT AND WHAT WILL DIFFERENTIATE YOU FROM OTHERS?

- Electric vehicles and AVs go hand-in-hand
- Utilizing University Research capability
- Don't lose sight of "connectivity"
- Balancing safety with everything!

WHAT IS IMPORTANT AND WHAT WILL DIFFERENTIATE YOU FROM OTHERS?

- Depends a lot on the work of this Advisory Council in defining your goals and finding your “sweet spot” - what is it that’s going to attract AV industry to your State?
- Few States are hosting ongoing AV car programs; but, the attraction of getting in early could bring in economic development along with tax revenues from businesses and employees looking for vibrant places to call home.
- Ensure and develop public confidence in any AV testing on State roads through education and transparent reporting

GHSA offers the following **five pieces of advice for states as they grapple with the issue of AVs:**

1

Be informed.

2

Be a player
in your state.

3

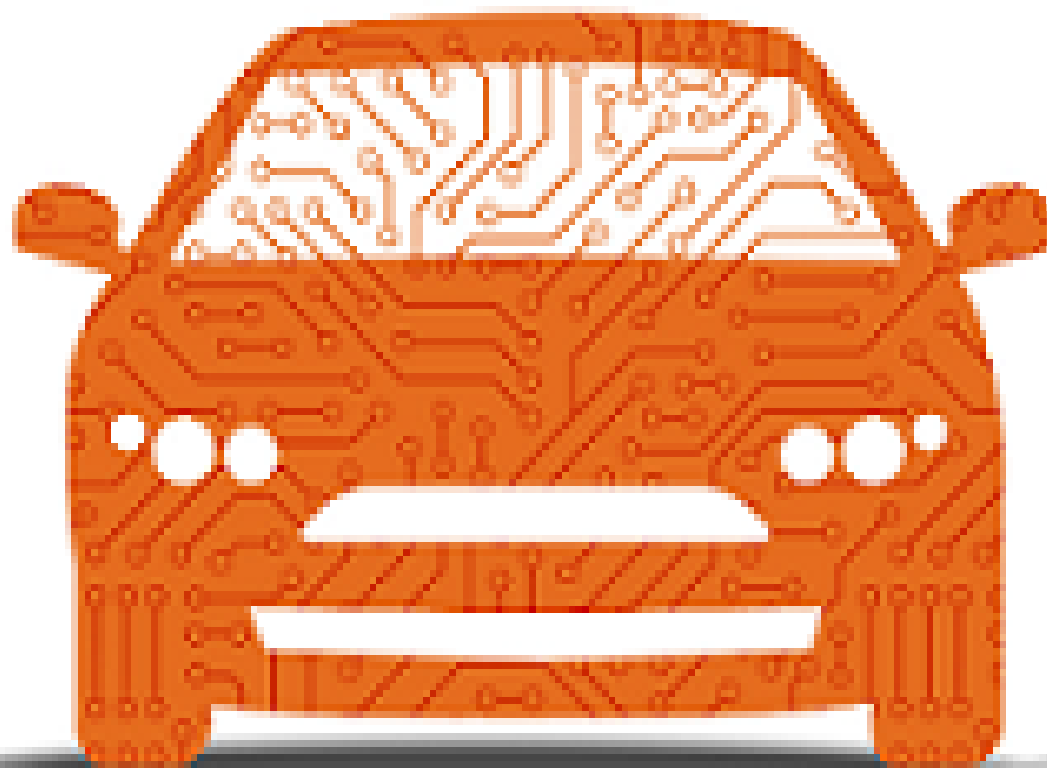
Understand
the role
of states.

4

Don't rush
into passing
laws or
establishing
regulations.

5

Be flexible –
this is a
new game.



“Technology does not drive change.

It is our collective response to the options and opportunities presented by technology that drives change.”

- **Paul Saffo, nationally recognized forecaster/futurist**

2018 Council of State Governments/Eastern
Regional Conference
Annual Meeting
“the largest gathering of state officials in the
East”



- *Autonomous Vehicles – Safety First* *August 6, 2018 – 2:15 - 4:15PM*
- Autonomous vehicles are on their way to becoming a reality, but many hurdles remain before they become more than a promise of a better transportation future. The biggest concern is ensuring the safety of both those inside and outside of the vehicles as they travel on our roads. This session will focus on defining what’s important for our state and provincial leaders to consider as they move forward in this rapidly emerging technology.
- David Strickland, former NHTSA Administrator and Spokesperson for the Self-Driving Coalition for Safer Streets
- Roger Cohen, Senior Advisor to the Secretary, Pennsylvania State Department of Transportation and Co-Chair, Pennsylvania Autonomous Vehicle Policy Task Force
- Representative Ruth Briggs King, Delaware House of Representatives and Member of Delaware Advisory Council on Connected and Autonomous Vehicles
- U.S. Federal Government official involved in Autonomous Vehicle Policy Development

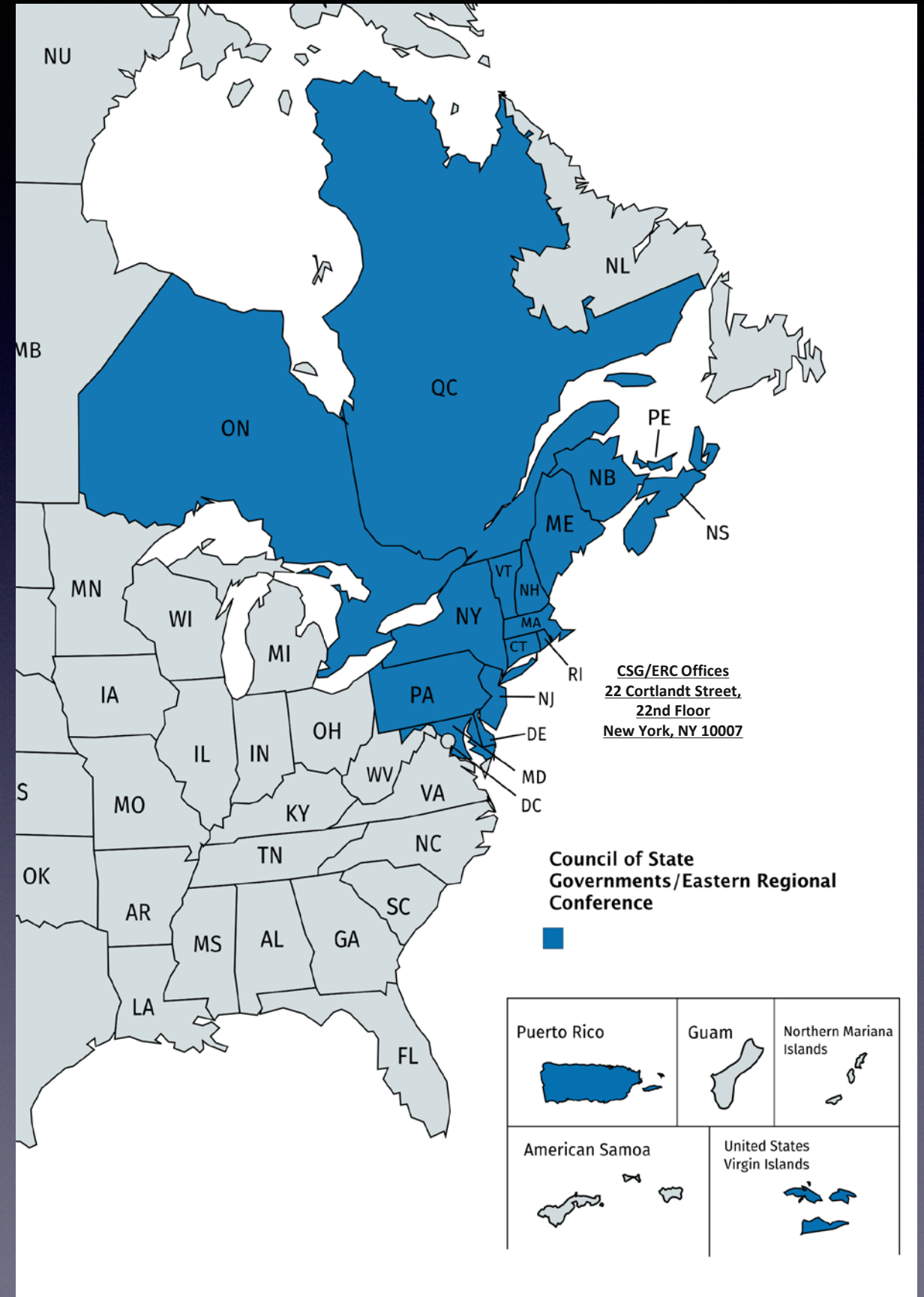


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Thank You!

Questions?

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- Good sources for what others are doing:
- Pennsylvania Autonomous Vehicle Testing Policy: Final Draft Report of the AV Policy Task Force, November 2, 2016
- Utah “Best Practices for Regulation of Autonomous Vehicles on Utah Highways” Report to the Legislature, October 2016
- Governors Highway Safety Association’s “Autonomous Vehicles Meet Human Drivers: Traffic Safety Issues for States

Best Practices for States - AV 2.0

- Provide a “technology-neutral” environment
- Provide licensing and registration procedures including proof of financial responsibility
- Provide reporting and communication methods for public safety agencies including procedures to report crashes or other incidents
- Review traffic laws and regulations that may be barriers to the operation of AVs
- Strongly encourages allowing the Federal government alone to regulate the safety design and performance aspects of AV technology

4

Generations of Self-Driving Vehicles

8

Years Self-Driving in More than 20 U.S. Cities

3.5

Million Real-World Miles on Public Roads

2.5

Billion Self-Driven Miles Simulated in 2016

Physical Testing:

0.4 million miles per hour

Simulated Testing:

8 million miles per day

Recent Articles On AVs

- Ford Seeks Patent For Autonomous Police Cars
- Ford's Driverless Delivery Vehicle Actually Has A Driver
- Autonomous Shuttle Buses Become The New Las Vegas Wedding Venue
- Will Autonomous Vehicles Be Able To Sense Bad Drivers?
- Autonomous Driving Will Spawn \$7 Trillion 'Passenger Economy': Intel
- Nearly 7 in 10 Americans Have News Fatigue

- Virginia Connected Corridor: An Established and Robust Testing Environment for V2I Applications
- To facilitate the understanding of CV deployment, the Virginia Department of Transportation (VDOT) has partnered with the Virginia Tech Transportation Institute (VTTI) to create the Virginia Connected Corridors (VCC).. To facilitate the real-world development and deployment of connected-vehicle technology, this facility has deployed at maintains nearly 50 roadside equipment units at both intersection and along the highways. Researchers are already implementing connected applications using the VCC, including traveler information, enhanced transit operations, lane closure alerts, and work zone and incident management. Messages are disseminated through the
- Initiatives are underway to drive the implementation of Connected and Automated Vehicle and Smart City deployments and applications.