Statement of

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On behalf of:

The Intelligent Transportation Society of America

BEFORE THE UNITED STATES SENATE
SUBCOMMITTEE ON TRANSPORTATION AND SAFETY
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

"Examining Technological Innovations in Transportation"

The Intelligent Transportation Society of America
Fixing America's Surface Transportation Act Reauthorization Platform:
Moving People, Data, and Freight: Safer. Greener. Smarter.

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INTRODUCTION

Chairman Fischer, Ranking Member Duckworth, and Members of the Committee, thank you for the opportunity to provide the Intelligent Transportation Society of America's (ITS America) perspective on "Examining Technological Innovations in Transportation."

I am pleased to be joined on this panel with Nebraska Department of Transportation Deputy Director of Technology and Strategic Planning Steve Ingracia.

My name is Shailen P. Bhatt, and I am the President and CEO of ITS America. Before joining ITS America in January 2018, I served as Executive Director for the Colorado Department of Transportation (CDOT). In that role, I oversaw the launch of the RoadX program, which is focused on deploying innovative technology solutions—including connected vehicles—and teaming with the private sector to shape the future of transportation. While at CDOT, I also served as the national Chair of the Vehicle-to-Infrastructure Deployment Coalition and the Chair of the National Operations Center of Excellence. Before CDOT, I served as Cabinet Secretary with the Delaware Department of Transportation and Deputy Executive Director of the Kentucky Transportation Cabinet. I also had the pleasure of serving as Associate Administrator at the Federal Highway Administration.

ITS America's vision is "A better future transformed by intelligent mobility – one that is safer, greener, and smarter." Our mission is to advance the research and deployment of intelligent transportation technologies and solutions to save lives, improve mobility, promote sustainability, and increase efficiency and productivity.

Our focus is policy that accelerates seamless mobility technology, connected and automated vehicle technologies, and smart infrastructure; policy that breathes new life into our transportation infrastructure by expanding investments in technologies that support smart communities; and policy that encourages new models and modes of transportation, including micro-transit, rideshare, carshare, bikeshare, micro-mobility, and unmanned systems. Investments in these new modes should also address issues of transportation equity so everyone gains access to mobility and opportunity. That said, our first and foremost priority has been, and continues to be, safety.

Founded as an official advisory board on road technology to the U.S. Department of Transportation, ITS America represents state and city departments of transportation, metropolitan planning organizations, automotive manufacturers, technology companies, engineering firms, automotive suppliers, insurance companies, and research and academic universities.[1] Our Board Chair is Malcolm Dougherty, Senior Vice President and Practice Lead,

[1] The ITS America Board is represented by the following companies: AAA, AECOM, Arizona Department of Transportation, California Department of Transportation, California PATH University of California Berkeley, Conduent, Central Ohio Transit Authority, Crown Castle, Cubic, Delaware Department of Transportation, District of Columbia Department of Transportation, Econolite, Ford Motor Company, General Motors, Gridsmart, HELP, Inc., HNTB, Iteris, Kapsch TraffiCom North America, MCity, Michael Baker International, Michigan Department of Transportation San Francisco Bay Area Metropolitan Transportation Commission, National Renewable Energy Lab, New York City Department of Transportation, Panasonic North America, Pennsylvania Department of Transportation, Qualcomm,

Transportation, Michael Baker International and former Director, California Department of Transportation; our Vice-Chair is Jennifer Cohan, Secretary, Delaware Department of Transportation.

Over the years since the Fixing America's Surface Transportation (FAST) Act was signed into law, automated and connected vehicle technologies have advanced, the collection and use of big data has become an increasingly valuable tool for decision makers, electrification of vehicles of every type from human scale to large-scale continues, and Mobility on Demand services are transforming how we get around. These technologies allow additional freedom of movement for those who have limited mobility access, such as people with disabilities, older adults, and those living in transit deserts. Technology advancements will also help begin to reduce the epidemic of fatalities on our roadways.

For these reasons, ITS America supports a FAST Act reauthorization that recognizes the added value of integrating technology into transportation infrastructure and services and provides funding for the rapid deployment of intelligent transportation technologies quickly and uniformly to transportation agencies and providers across the entire country.

MOVING PEOPLE, DATA, AND FREIGHT

Given the title and focus of this hearing is "Examining Technological Innovations in Transportation," and with Congress increasingly focused on the reauthorization of the FAST Act, my written testimony encompasses ITS America's FAST Act Reauthorization Platform: *Moving People, Data, and Freight: Safer. Greener. Smarter*, which ITS America released earlier today. *Moving People, Data, and Freight* bridges new and existing infrastructure technologies and new modes of mobility that we see across the country with the utmost importance of investments to bring our infrastructure to a state of good repair and integrate research, development, and deployment of technology to maximize efficiencies and safety and secure the United States' global leadership in the development and deployment of advanced transportation technologies.

INCREASE INVESTMENT IN RESEARCH AND DEPLOYMENT OF INTELLIGENT TRANSPORTATION TECHNOLOGIES.

Intelligent transportation technologies advance transportation safety and mobility, reduce congestion, improve air quality, and enhance American productivity by integrating advanced technologies into transportation infrastructure, operations, and vehicles. Only with investment certainty will the nation finally see and benefit from the research and the large-scale transformational deployments of intelligent transportation technologies that will define the way people, goods, services, and information move in the 21st century - and most importantly, finally help begin to reduce the epidemic of fatalities on our roadways.

Moving People, Data, and Freight investment policy supports the solvency of the Highway Trust Fund; the transition to a long-term and sustainable revenue source for transportation; and a national Vehicle Miles Traveled (VMT) pilot. In connection with a national VMT pilot, the

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Southwest Research Institute, State Farm Insurance, Toyota, Texas Transportation Institute, Utah Department of Transportation, Washington State Department of Transportation.

platform recommends including large freight shippers as participants and examines whether fleet telematics can be used as a method of data collection.

The platform supports increased funding for research, development, and demonstration of intelligent transportation systems technology; maintaining federal programs that allow state, metropolitan areas, and city congestion pricing strategies; and increased funding for Intelligent Transportation Systems programs to streamline the movement of goods beginning at ports and through the multimodal supply chain including freight intelligent transportation systems and digital infrastructure systems.

ITS America strongly supports the Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) program. The platform supports increasing funding and federal share to 80%. It recommends increasing the federal share to 100% for safety critical connected vehicle technologies including Vehicle-to-Vehicle (V2V), Vehicle-to-Infrastructure (V2I), and Vehicle-to-Pedestrian (V2P) under ATCMTD. The association also supports policy that makes V2P technologies an eligible activity under ATCMTD and recommends that the FAST Act reauthorization authorize and dedicate separate funding for ATCMTD. Under the FAST Act, the ATCMTD program has been funded through a set-aside from the Highway Research and Development, Technology and Innovation Deployment, and Intelligent Transportation System Research programs and has resulted in a reduction of transportation research and development that has historically propelled United States leadership in areas such as connected and automated vehicle development as well as the emerging area of artificial intelligence in mobility management.

SAFEGUARD CRITICAL TRANSPORTATION INFRASTRUCTURE FROM CYBERSECURITY THREATS

As vehicles and infrastructure become more connected, our nation's transportation system faces increasing cybersecurity risks. Given the ability to cause loss of life and inflict significant economic damage in a highly visible manner, cybersecurity attacks directed at those producing or operating technologies travelling over or connected to U.S. roadways will intensify. ITS America supports policy that would provide states and localities funding and technical assistance under federal-aid highway programs, federal public transportation programs, and ATCMTD to safeguard critical transportation systems that are more reliant than ever on connectivity to communicate and exchange data from cybersecurity threats.

PRIORITIZE THE 5.9 GHZ SPECTRUM FOR VEHICLE-TO-EVERYTHING (V2X) PUBLIC SAFETY TRANSPORTATION COMMUNICATIONS AND GROW INVESTMENTS IN VEHICLE-TO-INFRASTRUCTURE (V2I) AND VEHICLE-TO-PEDESTRIAN (V2P) TECHNOLOGIES

The U.S. Department of Transportation is working with industry, safety, and public sector stakeholders to develop and evaluate cooperative technologies, equipment, and applications known as Connected Vehicle (CV) technologies that operate in the 5.9 GHz band, inclusive of V2V, V2I, and V2P – collectively referred to as Vehicle-to-Everything (V2X). This includes all V2X technologies – Dedicated Short Range Communications (DSRC) as well as Cellular vehicle-to-everything (C-V2X) – because the band can be configured to enable real-time crash-avoidance

alerts and warnings—offering a significant opportunity to achieve a transformation in transportation safety.

Cable companies and their supporters are seeking additional spectrum for enhanced WiFi experiences and are aggressively pressuring the Federal Communications Commission (FCC) to force public safety transportation communications operating in the 5.9 GHz band to share that spectrum with unlicensed consumer broadband devices.

Speed matters when safety information is involved. Sharing the band could compromise the speed and put lives at risk. What if a driver knew, in fractions of a second, that an airbag deployed in a car in front of them? Alternatively, that the car in front, around the next curve, was sliding on black ice? Or a person is walking just around the next corner? Thanks to V2X, that driver would react – and avoid a crash. Deploying V2X that allow cars, trucks, bicycles, motorcycles, streetlights and other infrastructure to talk to each other will ensure more people travel safely. Safety is the top priority of the nation's transportation system.

Moving People, Data, and Freight supports policy that makes clear the 5.9 GHz band is prioritized for existing, new, and developing vehicle-to-everything (V2X) technologies that send hazard alerts to infrastructure, motorists, pedestrians, and other transportation system users and hold the promise to enhance automated driving systems. The platform supports a policy that ensures all three phases of testing for the 5.9 GHz band are complete before the FCC rules on whether the spectrum can be shared between V2X operations and unlicensed devices like WiFi.

V2I communications, which involves the exchange of safety and operational data between vehicles and elements of the transportation infrastructure, offer a wide range of safety benefits. V2I provides vehicles and drivers information about infrastructure operations -- weather and pavement conditions, how signals are directing traffic, and even the location of potential hazards at intersections and other critical road safety hotspots. V2I applications include red light violation warnings, reduced speed zone warnings, curve speed warnings, and spot weather impact warnings. V2I soon will support other applications that will disseminate the condition of the infrastructure, such as bridge integrity, and may even collect vehicle data that describes pavement condition. According to the National Highway Traffic Safety Administration (NHTSA), V2I technology helps drivers safely negotiate intersections and could help prevent 41 to 55 percent of intersection crashes. Another connected vehicle safety application that helps drivers with left turns at intersections could help prevent 36 to 62 percent of left-turn crashes. In addition to the lives saved, just these two applications alone could prevent up to 592,000 crashes and 270,000 injuries each year.

Fatalities in crashes involving at least one large truck increased by an estimated three percent in 2018, according to NHTSA's preliminary statistics. As part of the USDOT's Connected Vehicle Pilot Program, Wyoming is demonstrating what rural states can do to benefit travelers. Wyoming is deploying CV technology along the 402 miles of I-80 where winter wind speeds and gusts result in trucks blowing over and often lead to road closures. The Wyoming Department of Transportation (WYDOT) CV pilot focuses on commercial vehicle operators by developing applications to support advisories including roadside alerts, parking notifications and dynamic travel guidance. WYDOT is equipping 400 vehicles, a combination of fleet vehicles and commercial trucks with on-board units (OBUs). Of the 400 vehicles, at least 150 would be heavy trucks that are expected to be regular users of I-80. In addition, of the 400 equipped-vehicles, 100

WYDOT fleet vehicles, snowplows, and highway patrol vehicles will be equipped with OBUs and mobile weather sensors.

The Regional Transportation Commission of Southern Nevada recently became the first in the world to put roadway information into a digital format. As connected vehicles drive over the actual roadway, they can pick up differences between the "digital" road and the actual road. This could eliminate the need for agencies to manually examine roadways for striping or automatically report potholes instead of waiting for enough drivers to incur tire damage before fixing them. These vehicles will also give an up-to-the-minute snapshot of the system – how it is performing, are there any incidents, and live weather conditions.

Moving People, Data, and Freight recommends increasing the federal match to 100% for installation of V2I safety technologies. We also recommend expanding eligibility to include data collection and analysis software (including data acquisition through private sector partnership), maintenance and operations, fiber, integration, the costs associated with systems, and equipment required for V2I communications technology.

Pedestrian deaths increased by an estimated 4 percent and "pedalcyclist" deaths increased by an estimated 10 percent in 2018, according to NHTSA's preliminary statistics. V2X will enable deployment of safety solutions to protect these vulnerable users of the system. By allowing vehicles to communicate with users through sensors or vehicle-to-device communication, we can significantly reduce the number of people killed on our roadways. V2P encompasses a broad set of road users - people walking, children being pushed in strollers, people using wheelchairs or other mobility devices, passengers embarking and disembarking buses and trains, and people riding bicycles and scooters. ITS America recommends expanding eligibility under the Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) program to include V2P technologies.

EXPAND INVESTMENTS IN ADVANCED MOBILITY IMPROVEMENTS

ITS America supports expanding eligibility under highway programs to include advanced mobility safety improvements including data infrastructure and analysis, smart mobility improvements such as smart truck parking, smart work zones, smart pavements, predictive analytics platform, and build out of electric vehicle charging stations, hydrogen fueling infrastructure, natural gas fueling infrastructure, and other alternative fuels.

Due to the lack of truck parking availability information and safe and convenient truck parking spaces, tired commercial vehicle operators may continue to drive while searching for a place to park and rest, resulting in fatigue-associated crashes. Florida, Texas, Arizona, and California are among a growing number of states planning and deploying smart truck parking technologies for real-time truck parking availability. Smart truck parking technology uses a combination of in-pavement space occupancy detection for the location with mixed vehicle type usage and microwave vehicle detection for monitoring of ingress/egress at the weigh stations.

Another example of an advanced mobility improvement is data analytics. The Regional Transportation Commission of Southern Nevada (RTC) is using predictive analytics to improve safety and efficiency on freeways, including key freight corridors and major arterials by compiling

and analyzing data to report in real-time the location of accidents and predict where dangerous driving conditions or congestion may occur. This technology enables faster validation and response to roadway incidents as well as a more efficient use of resources to proactively deploy traffic patrols and abatement efforts with the goal of preventing incidents.

PLAN FOR TRANSFORMATIVE TRANSPORTATION TECHNOLOGIES

States, providers of public transportation, and Metropolitan Planning Organizations (MPOs) are expanding beyond traditional long-range scenario planning, which holds fixed certain transportation and land use assumptions, to consider big questions facing the transportation system, including whether connected and automated vehicles will increase the vehicle capacity of existing highway lanes; how automation and active transportation connections might help solve the first mile/last mile transit challenge; what roadway investments could incentivize the shift to connected and automated vehicles; how to make sure the entire transportation system is working together; and how to expedite technology safety benefits. Increased funding and flexibility will help planners analyze project performance across a range of different futures, including ensuring all modes of transportation work in concert and will lead to more informed project prioritization that maximizes the benefits of connected and automated technologies.

The Metropolitan Transportation Commission (MTC), MPO for the San Francisco Bay Area, launched Horizon, a new effort to plan for, and help shape, a range of possible connected and automated vehicle futures. By expanding beyond traditional long-range scenario planning, which holds fixed certain transportation and land use assumptions, Horizon will help inform big questions facing the transportation industry, such as:

- Will connected and automated vehicles substantially increase the vehicle capacity of existing highway lanes? If so, does it make sense to add additional physical capacity today?
- How might automation help solve the first mile/last-mile transit challenge, reducing barriers to transit ridership? What type of investments are needed to get us there?
- What roadway investments could incentivize the shift to connected and automated vehicles and expedite short-term safety benefits?

Ultimately, this effort could help planners analyze project performance across a range of different futures and lead to more informed project prioritization. Though the benefits may be significant, this planning effort requires substantial time and resources. Additional federal planning funds and flexibility to experiment with innovative initiatives like Horizon could support transportation planners in efforts to maximize the benefits of connected automated technologies.

Moving People, Data, and Freight supports additional planning funds to help regions and states better address complexities around transformative transportation technologies and climate change in the context of an integrated multimodal transportation system. ITS America also supports additional planning funds and flexibility to the planning process to prepare for a range of possible connected and automated vehicle future scenarios.

DEPLOY BROADBAND TO SUPPORT INTELLIGENT TRANSPORTATION TECHNOLOGIES

Telecommunication technologies, such as broadband, are essential to the transport of people, data, and freight. Assisting states and localities with recovering costs associated with conduit

installation, maintenance of conduit, and conduit inventory is critical to increasing broadband installation, especially in rural areas and economically disadvantaged urban areas. Combining broadband conduit installation with highway and road construction will result in decreased frequency of construction on highways and roads, reduce broadband installation costs, increase access to and reliability of broadband networks, increase public and economic benefits, and decrease the time needed to deploy fiber.

Moving People, Data, and Freight supports a new authorization that supports smart highways and streets with broadband fiber optic cable to make roads safer by establishing new federal funding to assist states and localities to coordinate statewide telecommunication and broadband plans and state and local transportation and land use plans, including strategies to minimize repeated excavations that involve the installation of broadband infrastructure in a right-of-way, among other activities that promote broadband conduit installation.

INCREASE BUILDOUT OF ALTERNATIVE FUEL VEHICLE INFRASTRUCTURE TO SUPPORT A FUTURE OF ZERO EMISSION VEHICLES

Alternative Fuel Vehicles are shaping the future of mobility, and the United States is poised to lead a global transition to zero emission vehicles (ZEV). Nevertheless, U.S. government analysis suggests that additional ZEV infrastructure investments will be required to satisfy the future of transportation. ZEV sales continue to increase year-over-year; however, these new mobility options will need 21st century infrastructure to continue to spur consumer adoption and address consumers' "range anxiety". U.S. government analysis suggests that current and projected deployments represent only a fraction of the estimated demand.

Moving People, Data, and Freight supports a new grant program to support state and local governments' efforts with infrastructure providers to invest in electric vehicle charging and hydrogen fueling infrastructure along designated alternative fuel corridors. ITS America also supports increasing federal funding under the Surface Transportation Block (STBG) Grant program and Congestion Mitigation and Air Quality (CMAQ) program to rapidly build out electric vehicle charging stations, hydrogen refueling stations, natural gas infrastructure, and technologies such as inductive charging to speed the deployment. The platform also supports the zero-emission plug-in electric vehicle tax credit, an additional allocation of zero-emission plug-in electric vehicle tax credits reserved for medium-duty commercial delivery vans, and the reinstatement of a zero-emission consumer tax credit for the purchase of fuel cell vehicles.

BUILD TRANSFORMATIVE AND ADAPTIVE INFRASTRUCTURE FOR DEPLOYMENT OF INTELLIGENT TRANSPORTATION TECHNOLOGIES TO MITIGATE CLIMATE CHANGE

States, metropolitan regions, and cities will require substantial investment to adapt infrastructure to be resilient in a changing climate and responsive to a new mobility paradigm. Federally supported, near-term infrastructure improvements will provide the dual benefit of immediately mitigating carbon-emitting congestion while preparing our nation for intelligent mobility and smart infrastructure.

ITS America recommends establishing a new flexible program to make transportation networks more resilient in the face of a changing climate and more responsive to the technology-fueled

transformation in how people and goods move. The program should be highly flexible, mode-neutral and include formula and discretionary components. Eligible projects should include capital and operational investments that improve both near-term and long-term system safety and performance. Examples include programs to support deployment of automated vehicles; V2X communications technologies; priced managed lanes; transportation demand management programs; strategic micro-transit investments; advanced parking freight delivery and incident management systems; alternative fuel charging infrastructure and other advanced technologies to support a clean transportation system; and climate mitigation/resiliency improvements. *Moving People, Data, and Freight* supports policy to make eligible funding for renewable energy projects in the Interstate rights-of-way for transportation use by states and localities for transportation related purposes.

ESTABLISH A MOBILITY ON DEMAND (MOD) PROGRAM FOR THE NEW WORLD OF MOBILITY

In the 21st century, mobility is less about moving vehicles and more about moving people, data and freight. Long-existing silos among cities, states, counties, road and transit agencies are disappearing; and private mobility service providers barely existed a decade ago. More choices exist now, but for people to fully realize the benefits of this new world of mobility, it must be easier to choose which option best meets their needs. This also means services that are accessible for every traveler and in all communities and neighborhoods.

In cities, Mobility on Demand (MOD) offers convenient, affordable, and, in the case of bikeshare, rideshare or micromobility services, more sustainable alternatives to driving within congested environments. For suburban areas, MOD offers first mile/last mile accessibility to transit, as well as more dynamic on-demand services to get around town. While often seen as an urban/metro transportation solution, MOD deployed in rural areas also provides first mile/last mile (though more like first/last 50 miles) connections to transit, intercity bus and rail transport, and essential air service airports. Rideshare and ride sourcing is providing support for seniors to access social and health services. Micromobility services offer options to travel in town. MOD includes bikeshare and scooter share deployments on college campuses. New and improved MOD transit and paratransit services also can benefit rural communities.

The framework for aggregating and managing supply and demand depends on connected data rather than on a particular technology. MOD is powered by technology and mobility services that currently and will include:

- Data systems and data analytics platforms, specifically open data platforms, open source technologies, and data sharing agreements that allow public and controlled access to mobility data to plan real-time operations and longer-term planning;
- Asset management systems (parking, curb, freight delivery), specifically to provide opportunity for mapping assets to develop more comprehensive use management strategies and value pricing systems (e.g. assessing a fee for curb-side passenger drop off, or use of designated delivery or drop-off zone or conversely a fee for not using provided zones);

- Security/safety systems: this can be physical technologies – like locking systems for bikeshares where bikes must be secured at the end of a trip – or cybersecurity systems. With the potential introduction of automated/autonomous vehicles into MOD services, like rideshare, it will be increasingly important to have systems that monitor performance and track/mitigate any security breaches. It also may be increasingly important to have systems that confirm that the rider is the intended person, and also potentially (in the case of AVs, per say) monitor that riders are safe throughout their trip.
- Geospatial Technology: defined as the collective data and associated technology that has a geographic or locational component; Technology used to acquire, manipulate, and store geographic information. Geographic Information Systems (GIS) is one form of geospatial technology. GPS, remote sensing, and geofencing are other examples of geospatial technology. – Geofencing, for example, is being used in scootershare and bikeshare programs to monitor use and designate certain areas as no-go or no-park zones.
- Connected vehicle platforms and data, specifically to provide opportunity for real-time operations such as deployment of emergency service providers, rerouting of traffic during major events, and fleet management (public or private);
- Integrated trip planning technology platforms that power travel across a variety of modes, including public transportation, transportation network companies, car and bike sharing services, micro-transit providers, and even private vehicle mobility planning;
- Integrated booking and payment systems that power seamless travel across a variety of modes to include both public and private mobility services;
- Integrated payment systems for transportation adjacencies or value-pricing asset usage (e.g., tolling, congestion pricing, dynamic parking, curb-side pricing, motor vehicle administrative transactions, electric charging stations);
- Integrated payment systems that include other specialized and demand-response transportation (e.g., human service transportation, faith-based transportation, non-emergency medical transportation, paratransit, volunteer-based transportation, closed or open loop shuttle services, employee and campus transportation); and
- Integrated payment systems that could include multiple non-transit/non-mobility services (e.g., retail, incentivization, loyalty programs); social programs (e.g., travelers with disabilities, student discounts, transit benefits, social security, senior citizens, veteran benefits, human service programs); and access and authorization (e.g., student cards, government IDs, campus/ academic cards, library access, community and facility access, municipal programs, age-based programs).

In the future, Augmented Reality (AR) enhanced by 5G connectivity could make MOD and the delivery of real-time data even more useful. For instance, AR can be used to create interactive maps to help people navigate transit systems. By using the camera in a traveler's mobile device and superimposing digital information on what the camera is capturing, AR can make it easier for the user to make more informed decisions based on up-to-date information. Holding a mobile device on top of a transit map, for example, would allow users to see real-time movement of trains and buses near their location.

Access to transportation means access to jobs, education, and healthcare, which is a major challenge for people with disabilities. New technologies have in the past and will continue to

expand access to transportation. According to the U.S. Census, nearly one in five people in the United States have a disability. They also represent significant pent-up demand for transportation services. As a result, it is anticipated that there will be a notable increase in travel should fully automated vehicles succeed in expanding mobility access. The Policy Institute of AARP (formerly the American Association of Retired Persons) estimates that one-third of U.S. residents do not drive. Recent research by Carnegie Mellon University suggests that if non-drivers, such as older adults and people with disabilities, were to gain access to automated vehicles, VMT could increase up to 14 percent. To put this in perspective, VMT growth usually hovers around one percent annually. Nearly everyone experiences disability at one time or another, often the result of injury, sickness, or aging. Furthermore, access to transportation may also help older adults remain in their homes to age in place, and independence in mobility not only often improves the lives of those who achieve it but also reduces associated burdens and stress on care-giving family members.

MOD may also promise expansion of accessible transportation. Transit agencies are contracting with shared ride and ride hailing companies to provide paratransit services. As a result, ride-hailing services become less like taxi services and more like paratransit. Under these contracts, ride-hailing services must provide accessible vehicles and driver assistance.

ITS America has worked with the auto industry, tech companies, groups representing people with disabilities, and the Departments of Transportation, Labor and Health and Human Services to devise roadmap for accessibility in new automated and connected vehicle systems.

Moving People, Data, and Freight supports establishing a MOD program that encourages flexibility within federal transportation programs to meet changing mobility needs, including partnerships with companies offering shared-use trips (car, bicycle, new mobility modes), data management, and other technology companies for first mile/last mile services and improved freight delivery, the integration of mobility services and technologies, and new fare and integrated payment technologies. ITS America supports a MOD program that establishes a data sharing framework that provides standardization for the transfer of data among transportation operators and providers to foster the efficient use of capacity, enhance management of new modes of mobility, and promote the creation of innovative planning tools.

STRENGTHEN THE UNIVERSITY TRANSPORTATION CENTERS PROGRAM

Moving People, Data, and Freight supports reforms in the University Transportation Centers program that directs grants to universities with research and technical expertise; encourages leading edge as well as near-term practical applied research (reduce the time period from research concept to completion); encourages broader inclusion of ITS-related curriculum, degrees, and professional development programs for current and future workforce; and increases opportunities for private sector funding contributions.

CONCLUSION

Just as transportation infrastructure was critical to the development of our economy in the 20th century, maintenance of existing infrastructure and deployment of intelligent mobility and smart infrastructure will be critical for our global competitiveness in this century. Advances in robotics,

artificial intelligence, and wireless communications will define the way people, goods, services, and information move in the 21st century.

New forms of mobility are being deployed even as others are being developed. When cars were invented a century ago, Departments of Roads were created to build infrastructure for this new form of transportation. Those agencies are now Departments of Transportation, having grown to include many modes of transportation. Now those same agencies are evolving again to provide seamless multimodal mobility and to build smart infrastructure that will support the technology-driven 21st-century economy, which is all about moving, people, data, and freight.

Changes are happening today that will fundamentally affect how people interact with transportation in the months and years ahead. ITS America is helping cities, states, the private sector, and researchers as we work toward our vision of a better future transformed by intelligent mobility - one that is safer, greener, and smarter.

Our members come to one table—ITS America—to shape the next generation of transportation and infrastructure driven by intelligent transportation technologies.

Thank you again for the opportunity to testify today, and I am happy to answer any questions you may have.

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ITS America acknowledges the contributions of ITS America Smart Infrastructure Task Force FAST Act Reauthorization co-chairs John Barton, National DOT Market Sector and Senior Vice President, HNTB, and Tina Quigley, Chief Executive Officer, Regional Transportation Commission of Southern Nevada, and more than 40 members of the task force representing the strength of ITS America: states, cities, metropolitan planning organizations, automakers, technology companies, research universities, and engineering, construction, and technical services firms. ITS America acknowledges the assistance of Boyagian Consulting.

For more information on ITS America's FAST Act Reauthorization Platform: Moving People, Data, and Freight, contact ITS America Vice President of Legislative Affairs Ron Thaniel at rthaniel@itsa.org.

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