



## **A Better Future Transformed by Intelligent Mobility**

### *ITS America Transportation Policy*

The Intelligent Transportation Society of America (ITS America) is the nation's leading advocate for the technological modernization of our transportation system by focusing on advancing research and deployment of intelligent transportation technology. 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, transit, metropolitan planning organizations, automotive manufacturers, technology companies, engineering firms, automotive suppliers, insurance companies, and research and academic universities.<sup>1</sup> Our members come to one table – ITS America – to shape the next generation of transportation and infrastructure driven by intelligent transportation technologies.

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 the deployment of seamless mobility technology, connected and automated vehicle technologies, and smart infrastructure; policy that breathes new life into our transportation system by expanding investments in technologies that support smart communities; policy that encourages new models and modes of transportation, including micro-transit, ridesourcing, carshare, bikeshare, micro-mobility, and unmanned systems; and policy that does all of this while making our transportation system safer, greener, and smarter. Investments in these technologies should also address issues of transportation equity, so everyone gains access to mobility and opportunity, and the valid concerns of the transportation workforce. However, our first and foremost priority has always been, and continues to be, safety.

Our nation is on the cusp of great opportunity in how we define our 21st century transportation system, one that can ensure greener communities, increased opportunity and equity, and safer streets for all Americans. The integration of technology is key as we build for the future. Technologies including automated, connected, shared, and electrified transportation and infrastructure will define the way people, goods, services, and information move; reduce greenhouse gas emissions from the transportation

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<sup>1</sup> The ITS America Board is represented by the following organizations: AAA, AECOM, Amazon Web Services, Arizona Department of Transportation, California PATH University of California Berkeley, California State Transportation Agency, Central Ohio Transit Authority, Cisco, Cubic, District of Columbia Department of Transportation, Econolite, Florida Department of Transportation, Ford Motor Company, General Motors, PrePass Safety Alliance, HNTB, Iteris, Los Angeles Department of Transportation, MCity, Michael Baker International, Michelin, Michigan Department of Transportation, National Renewable Energy Lab, New York City Department of Transportation, Panasonic North America, Qualcomm, San Francisco Bay Area Metropolitan Transportation Commission, San Francisco County Transportation Authority, State Farm Insurance, Texas Department of Transportation, Texas Transportation Institute, Toyota, Virginia Department of Transportation, and Washington State Department of Transportation.

sector; and ensure that the United States continues its leadership in the technology-driven global economy.

ITS America has adopted policy that will advance the research, development, and deployment of transportation technologies to improve our transportation system by making it safer, greener, and smarter. These policies will have specific and measurable impacts to address the challenges our transportation system currently faces, including fatalities and injuries, congestion, emissions, and inequitable access. ITS America's policies are assigned to six broad categories: Smart Infrastructure, V2X and Connected Transportation, Automated Vehicles, Mobility on Demand, Emerging Technology, and Sustainability and Resiliency.

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## 1. Smart Infrastructure

To lead the 21st-century technology-driven global economy, America will need to invest in our digital infrastructure and rebuild and modernize our existing physical infrastructure. ITS America supports federal policies that increase investment in automated, connected, shared, and electrified transportation technologies and infrastructure improvements that benefit automated and human drivers, particularly communications, cybersecurity, and well-maintained roadways.

ITS America's federal policy supports the rapid integration of advanced technologies into transportation infrastructure, operations, and vehicles to improve roadway efficiency, reduce accidents, and facilitate the safe introduction of autonomous technologies into the transportation system; support the electrification of our nation's roadways, transit, and freight systems to reduce greenhouse gas emissions in the transportation sector; and safeguard critical transportation systems from cybersecurity threats.

ITS America supports federal policies that strengthen our nation's commitment to transit; Mobility on Demand, so everyone gains access to mobility and opportunity; congestion pricing strategies to improve mobility and the environment; and increased broadband and 5G deployment specifically for intelligent transportation technologies. ITS America also supports funding for research, development, and demonstration of intelligent transportation technologies, including alternative fuel, connected, and automated technologies to ensure U.S. technological leadership.

### 1.1 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.

It has been more than 25 years since Congress last raised the federal fuel taxes that primarily support the Highway Trust Fund, and the purchasing power of this revenue has decreased by more than 40 percent over that time. Current revenues deposited into the Highway Trust Fund are insufficient to support existing federal transportation programs, including intelligent transportation technologies, without significant general fund transfers. According to the Congressional Budget Office, to simply maintain the current Highway Trust Fund spending levels adjusted for inflation after the FAST Act, Congress will need to identify about \$100 billion in additional revenues for a six-year bill through 2026. Funding stability is crucial to meeting our nation's transportation needs.

A long-term FAST Act reauthorization is needed before the current extension expires in September 2021. 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.

- Ensure the solvency of the Highway Trust Fund; transition to a long-term and sustainable revenue source for transportation; and support additional funding for intelligent transportation technologies.
- Increase funding authorizations from the Highway Trust Fund for research, development, and demonstration of intelligent transportation systems technology to secure the United States'

global leadership in the development and deployment of advanced transportation technologies. Provide increased funding for research of connected and automated vehicle technology. Ensuring United States technological leadership in transportation will have broad and substantial safety and economic benefits.

- Maintain federal programs that allow state, metropolitan areas, and city congestion pricing strategies to reduce congestion and to raise revenues to support transportation improvements and improve trip time reliability; fund the Value Pricing Pilot Program to provide grants to state, metropolitan areas, and local governments to demonstrate to what extent congestion may be reduced and person-throughput can be increased through application of congestion pricing strategies, and the magnitude of the impact of such strategies on driver behavior, traffic volumes, transit ridership, air quality and availability of funds for transportation programs.
- Enhance the transportation systems of communities through innovative technologies, including connected and automated transportation and infrastructure; intelligent infrastructure; communications technology; and Mobility-on-Demand by authorizing new funding for a Strengthening Mobility and Revolutionizing Transportation (SMART) Communities Challenge Grant. Eligible applicants include large cities with a population between 400,000 and 1,000,000; mid-size city with a population between 75,000 and 400,000; mega-city/region including a city or multi-jurisdictional group with a population above 1,000,000; multi-jurisdictional group including two or more combination of states, tribal governments, local governments, counties, public transit agencies, public toll authorities, or metropolitan planning agencies; regional partnership including two or more jurisdictions with a combined population between 10,000 and 75,000; and rural community with a population between 10,000 and 75,000 people, not located within an urbanized area or cluster.
- Support increased funding for Intelligent Transportation Systems (ITS) programs to streamline the movement of goods beginning at ports and through the multimodal supply chain.
- Support policy that increases funding to improve supply chain efficiencies at ports and throughout the multimodal network that serves ports by increasing multimodal funding under current FAST Act formula programs and removing the multimodal caps from the Infrastructure for Rebuilding America (INFRA) grants. Support funding for Maritime Administration's (MARAD) Port Infrastructure Development Program that includes freight intelligent transportation systems and digital infrastructure systems as an eligible project.

**1.2 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.

- Support policy that would provide states and localities funding and technical assistance to safeguard critical transportation systems that are more reliant than ever on connectivity to communicate and exchange data from cybersecurity threats.

- Amend 23 U. S. C. § Sections 119, 133, 167, and 148 of 23USC to authorize that funds made available may be used to implement measures to protect highways, roads, bridges, and tunnels against cybersecurity threats to transportation infrastructure by allowing system access only as authorized and preventing malicious activity.
- Amend 49 U. S. C. Chapter 53 of Subtitle III of 49USC to protect public transportation systems from cybersecurity threats – Amend § 5302 definitions to include measures to protect against cybersecurity threats under the definition of Capital Project to allow system access only as authorized and prevent malicious activity.
- Amend 23 U. S. C. § 503(c)(4)(E) to include measures to protect against cybersecurity threats as an eligible use of grants.
- Provide funding for risk assessments and planning services; developing best practices supporting cyber protection of legacy infrastructure, software, and hardware solutions; implementing active and predictive threat monitoring services; deploying continuous monitoring and attack mitigation cyber security technologies and devices to harden traffic management systems and operations centers, creating Security Operations Centers (SOCs); and providing cybersecurity training to cybersecurity staff and other staff.
- Eligible activities include operating ITS Networks that enable infrastructure owner-operators to actively manage and protect transportation system such as secure traffic signal and sensor networks; secure wireless, wired, and fiber-optic networks; toll lane devices and systems; secure devices and systems to provide reliable and authoritative traveler information (VMS, websites, handheld device applications, in-vehicle information systems, etc.); active traffic management systems (lane use signals, variable speed limits); camera networks; weather-incident management systems; rock fall, flood, and avalanche detection systems; seismic detection systems; connected vehicle systems (Vehicle-to-Everything: infrastructure, other vehicles, people, cyclists, etc.); and Security Credential Management System (SCMS) that ensures connected vehicle technologies operate in a safe, secure, and privacy-protective manner.

**1.3 Reduce Vulnerability to Cyberattack and Build Assurance in the Security of New Technologies:** Much attention needs to be paid to the challenge of cybersecurity. Internet of Things (IoT) technologies increase the probability that attackers may compromise safety and mission critical services, representing an entirely new level of potential vulnerability for critical infrastructure. Along with safety, security must be addressed by the industry along the entire technology lifecycle—in design, development, deployment, and operations. Federal support in improving the institutional and technical capacity of state and local transportation authorities is critical as well as information sharing, where appropriate, with industry on potential vulnerabilities and risks. Immediate actions:

- Expand support at the state and local levels to address cybersecurity of infrastructure.
- Address security at the federal level where it makes sense, especially where it can convene and resolve approaches and agreements to address vulnerability.
- Address security and privacy requirements for IoT technology, specifically those that are unique to transportation.

**1.4 Build Public Confidence in the Privacy, Security, and Safety of New Transportation Technologies:**

New vehicle and traffic management technologies are largely data driven. They have the potential to reduce injuries and fatalities dramatically, but the driving public may be concerned about privacy and security implications. For all categories of intelligent transportation, work needs to be done to ensure privacy requirements are well understood, implemented correctly, and communicated clearly to all stakeholders. Outreach needs to be conducted to ensure that drivers (or road agencies) do not eschew new safety technologies because of concerns over privacy or security. Immediate actions:

- Expand support at the state and local levels to address privacy of infrastructure technology solutions and encourage industry and public sector to establish policies such as the auto industry's Privacy Principles for Vehicle Technologies and Services.

**1.5 Expand Investments in Advanced Mobility Improvements:** Expand eligibility under highway programs to include advanced mobility safety improvements including data infrastructure and analysis, smart mobility improvements such as smart work zones, smart pavements, predictive analytics platforms, automated traffic management and traffic enforcement systems, and build out of electric vehicle charging stations, hydrogen fueling infrastructure, natural gas fueling infrastructure, and other alternative fuels.

- Amend 23 U. S. C. Federal-Aid Highways to include as an eligible project or program the deployment of advanced transportation safety improvements, including data infrastructure and analysis, smart mobility improvements such as smart truck parking, smart work zones, and smart pavements.
- Amend 23 U. S. C. §133(b), §119(d), § 167 to make eligible a project or program to establish electric vehicle charging stations or natural gas or hydrogen vehicle refueling stations for the use of battery powered or natural gas or hydrogen fueled trucks or other motor vehicles at any location in the state (giving priority to corridors designated under section 151) except that such stations may not be established or supported where commercial establishments serving motor vehicle users are prohibited by section 111 of title 23, USC.
- Repeal all prohibitions and limitations against the use of funds apportioned to a state under section 104(b) of title 23, USC, for the purchase, operation, or maintenance of automated traffic management and traffic enforcement systems. Such funds may be used by a local government, metropolitan planning organization, or regional transportation planning organization to develop and implement a vision zero plan, work zone safety, or school zone safety program. Notwithstanding any other provision of law, no funds under section 104(b) of title 23, United State Code, may be used to compel or mandate that a state, local government, metropolitan planning organization, or regional transportation planning organization implement or operate an automated traffic management or traffic enforcement systems.

**1.6 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. Increased planning funding will also support states and MPOs in fulfilling current performance-based planning mandates, which were added in the 2012 transportation authorization without a commensurate increase in planning resources.

- Support policy that provides 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.
- Support policy that provides additional planning funds and flexibility to the planning process to prepare for a range of possible connected and automated vehicle futures scenarios.
- Amend section 23 U.S. C. § 104(b)(6) and 49 U. S. C. § 5338 to increase the amount of funding for metropolitan planning.

**1.7 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.

Nothing in this policy proposal establishes a mandate or requirement that a state or locality install broadband infrastructure in a highway right-of-way.

- Amend 23 USC to add 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:
  - Identify a broadband utility coordinator to facilitate the broadband infrastructure right-of-way efforts within the state;
  - Register broadband infrastructure entities that seek to be included in those facilitation efforts;
  - Establish a process to electronically notify such entities of the state transportation improvement program on an annual basis;
  - 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; and
  - Ensure existing broadband infrastructure entities are not disadvantaged.



**1.8 Build Broadband Infrastructure and Secure Spectrum to Support Advanced Vehicle and Transportation Infrastructure Technologies:** Safer and more efficient highways and roads of the future require upgraded telecommunications network infrastructure—including antennas, fiber optic wireline connectivity, and more spectrum to handle the explosion of data coming from millions of cars, traffic signals, road sensors, and more. Telecom often requires transportation right-of-way access (e.g. pole attachments) along roadways for network infrastructure. Intelligent transportation requires advanced broadband networks providing ultra-fast speeds and high bandwidth capable of carrying increased network traffic and lower latency that minimizes delays in communications. Immediate actions:

- Include broadband networks in any infrastructure legislation, including broadband funding for rural and underserved urban areas.
- Explore opportunities to expand “smart cities” transportation technology deployment along with deployment of small cell deployment in urban and suburban areas.

**1.9 Upgrade our Infrastructure to Accommodate New Automotive Technologies:** Road infrastructure must be more accommodating and predictable for next generation vehicles. For fully automated vehicles to navigate safely, roadways must be better maintained and operated, traffic signals further standardized and connected (e.g. V2I), and road signage and lane markings must be maintained or upgraded. New driving conventions, such as how robotic vehicles might “wave through” pedestrians on crosswalks, will be required for robotic vehicles to interact with other road users. Operations research must be conducted to ensure that the infrastructure and traffic codes can be adjusted where necessary to accommodate these new classes of advanced vehicles. As the number of electric cars and other alternative fuel vehicles on the road has continued to increase, private and publicly accessible charging infrastructure must also continue to grow. Immediate actions:

- Encourage more operational research in addressing how infrastructure upgrades will complement new vehicle technology deployment, such as connected/ and automated vehicles and alternative fuel vehicles.
- Upgrade road technology infrastructure—such as power, communications, and security—to ease expansion of vehicle-to-infrastructure systems and other mobility and safety applications.
- Upgrade and integrate energy infrastructure, such as charging stations for electric vehicles and encourage distributed energy resource (DER) management.
- Advocate updates to uniform traffic control device standards and traffic codes where helpful.

**1.10 Bridge Gaps between Research & Development and Deployment of New Technologies:** Once R&D is completed, new technologies can take decades to be deployed widely. Constraints are often lack of knowledge of cost benefits, lack of expertise in implementing and operating complex systems, and budgetary and procurement challenges. Immediate actions:

- Advocate for more collaborative investment in high-risk/high-reward R&D and operational testing. Use “challenges” and other competitions to foster innovation in getting new technologies and integrated systems deployed.

- Establish a clear roadmap for architecture and standards that are needed to accelerate technology deployment from a commercial/public procurement perspective.
- Identify needs to create or maintain architecture and standards that assure quality, safety, security, accessibility, interoperability, and reliability of products, processes, and services for critical initiatives — such as connected and automated vehicles, or systems that address vulnerable road users such as pedestrians and cyclists.
- Examine workforce education and training needs to determine if lack of technical skills is limiting deployment of new technologies, especially in public infrastructure.
- With government and industry partners, promote the lifecycle of research, development, adoption, performance management, and technology tracking.
- Support legislation in Congress that would establish technical committees/councils of outside experts to advise the Secretary of Transportation and Congress on rulemakings and standards with respect to automated and connected vehicles.
- Address issues pertaining to mobility access for disabled communities, mobility access for older adults and populations underserved by traditional public transportation, labor and employment issues, environmental impacts, transportation and mobility impacts, vehicle communications with roadway and infrastructure assets, and consumer privacy and security.

**1.11 Research on Advanced Technologies and Long-Term Impacts to our Transportation System:**

More federally funded research around operations and economic research is needed to understand how newly-deployed technologies, in the aggregate, might impact transportation systems on a local, regional, and national basis. Use of artificial intelligence is an obvious opportunity to improve safety and mobility but presents unique challenges that need to be addressed. Human interaction with technologies such as automated vehicles and the risks of driver distraction still need to be better understood. Immediate actions:

- Establish a clear federal role and list of priorities that can enable a cross-fertilization of ideas, techniques, and discoveries around foundational elements supporting commercialization of connected and automated vehicle and new concepts of mobility such as UAVs.
- Examine long-term issues such as job dislocation because of technology changes and balance those changes with immediate gains from new technology jobs. Analyze skills and education requirements to facilitate new technical jobs in auto and road technology management and maintenance.
- Support legislation in Congress that would expand the authority created in the FAST Act to test vehicles not in compliance with FMVSS to universities, new market entrants, technology firms, and automotive parts suppliers.

**1.12 Invigorate the ITS Program Advisory Committee:** With significant advances in automated technologies, deployment of connected vehicle technologies, the collection and use of big data, new forms of shared mobility, and workforce concerns, the role of the ITS Program Advisory Committee (ITSPAC) should be strengthened in the reauthorization of the FAST Act.

The ITSPAC was established to act solely in an advisory capacity to the Secretary of Transportation on all matters relating to the study, development, and implementation of intelligent transportation systems. Through its sponsor, the ITS Joint Program Office, the ITSPAC makes recommendations to the Secretary regarding ITS program needs, objectives, plans, approaches, content, and progress. Immediate actions:

- Section 5305 of SAFETEA-LU (23 U.S.C. 512 note; Public Law 109–59) is amended by striking subsection (h) and inserting the following:
- Recommend that the Committee be composed of not more than 25 members; be balanced between metropolitan and rural interests; and include, at a minimum, a representative of a state department of transportation; a representative of a local department of transportation (other than an MPO); a representative of a state, local, or regional transit agency; a representative of an MPO; a representative of a national transit association; a representative of a national, state, or local transportation agency or association; a private sector user of ITS technologies, including emerging vehicle technologies; a private sector developer of intelligent transportation system technologies, including emerging vehicle technologies; an academic researcher with expertise in computer science or another information science field related to intelligent transportation systems; and a representative of a nonprofit group representing the intelligent transportation system industry.
- Recommend that member terms are three years. Of the members first appointed to the Committee—
  - 1/3 shall be appointed for a one-year term;
  - 1/3 shall be appointed for a two-year term; and
  - 1/3 shall be appointed for a three-year term.
- On expiration of the term of a member of the Committee, the member may be reappointed and if the member is not reappointed may serve until a new member is appointed.
- The Committee shall, at a minimum, provide input into the development of the intelligent transportation system aspects of the five-year strategic plan under section 6503 of title 49, United States Code; and annually review areas of intelligent transportation systems programs and research being considered for funding by the Department, to determine—
  - whether those areas of research are likely to advance the state of the practice or state of the art in intelligent transportation systems;
  - whether intelligent transportation system technologies are likely to be deployed by users, and if not, to determine the barriers to deployment;
  - the appropriate roles for government and the private sector in investing in the research and technologies being considered; “(iv) how Federal resources are being utilized to advance intelligent transportation systems; and “(v) how the Department is engaging and supporting local communities in the adoption and integration of intelligent transportation systems;
  - help develop and revise the resource guide described in section 4(b) of the Smart Transportation Advancement and Transition Act; and

- respond to requests for assistance, advice, or consultation from states and local communities as a result of the resource guide described in section 4(b) of the Smart Transportation Advancement and Transition Act.
- The Committee shall convene not less frequently than twice each year; and may convene with the use of remote video conference technology.

**1.13 Strengthen the University Transportation Centers Program:** The Department of Transportation invests in the future of transportation through its University Transportation Centers (UTC) Program, which awards and administers grants to consortia of colleges and universities across the United States. The UTC Program advances state-of-the-art in transportation research and technology and develops the next generation of transportation professionals. The congressionally mandated program has been in place since 1987 to help address the nation’s ever-growing need for the safe, efficient, and environmentally sound movement of people and goods.

- Support reforms in the UTC 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 increase opportunities for private sector funding contributions.

**1.14 Reinvest in our Communities through Smart Technology:**

- **Communicate the Benefits and Facilitate Deployment of Smart Community Technologies:** The world is increasingly becoming more urban and technology centric. In the United States, more than 85% of the nation’s population live in cities and metropolitan areas. [6] The portion of the world’s population that lives in cities is projected to grow from 50% to nearly 70% by 2050. To adjust to this rapid growth, we will need to identify new ways to assist communities in becoming “smarter” and more efficient. Access to jobs, education, healthcare, and public safety services are critical. Changing how we design, develop, and manage the nation’s critical infrastructure components will be an essential element for any “Smart Community” of the future. Immediate actions:
  - To increase support by elected officials, policymakers, and the general public, show how ITS can improve everyday life. Use the narrative to inspire and make the business and economic case for a safer, faster, more equitable, efficient, and sustainable transportation system.
  - Encourage federal funding flexibility and new funding mechanisms by advocating for flexible policies regarding federal/state matching requirements (e.g., 100% federal funding upfront with a back-end match by Locals/State for continuing operations) and other implementation provisions in the FAST Act and any new infrastructure bill related to the deployment of smart technology for communities.
  - In any new infrastructure bill, examine requiring that a percentage of all infrastructure funding must be allocated for smart community/tech-driven mobility and emphasize performance goals.

- **Identify Innovation Champions at the Local Level and Educate Them on the Tools for Experimentation:** In most cases at the state and local levels, no single public agency can oversee an integrated “smart community” deployment, so government champions are needed. Procurement processes are often inflexible, making it difficult for public agencies to go outside their traditional base of supply (e.g. start-ups, etc.) or to rapidly iterate and experiment with different technology approaches. Immediate actions:
  - Encourage communities to allow Chief Technology Officers or other appropriate officials to use other transaction authority, pilot programs, and similar programs to bypass onerous, time-consuming procurement procedures. Encourage the Federal Highway Administration to enable better flexibility in the states by using performance level conditions measures instead of the traditional measures.
  - Examine federal restrictions on sole sourcing and study means to add flexibility to communities (e.g. States, Cities, MPOs, etc.).
  
- **Support Proposals that Integrate Federal “Smart Communities” Programs and Provide Resources Where Appropriate:** Support legislative efforts that would improve coordination of smart community programs across the federal government and provide state and local governments with technical assistance and resources to help foster the deployment of smart community technologies. Immediate actions:
  - Support STEM education and training required for the development and operation of smart communities.
  - Support the necessary R&D to enhance the functionality—including cybersecurity and privacy protections—of smart community technologies.

## 2. V2X/Connected Transportation

Vehicle-to-Everything (V2X) and connected transportation technologies provide significant opportunity to make our transportation system safer, greener, and smarter. These technologies allow vehicles to communicate real-time information directly with other vehicles, infrastructure, and vulnerable road users to prevent traffic crashes, relieve congestion, and reduce environmental impacts. These technologies can significantly reduce the nearly 37,000 fatalities and millions of injuries that occur annually on our nation’s roads, improve mobility and reduce emissions by relieving congestion, and allow automated vehicles to identify objects beyond line-of-sight and operate cooperatively in the future.

ITS America’s V2X and connected transportation policy addresses topic areas such as the development and deployment of connected, Vehicle-to-Vehicle (V2V), Vehicle-to-Infrastructure (V2I), and Vehicle-to-Pedestrian (V2P) technologies and innovations; spectrum allocation and use; standards development; interoperability among technologies and infrastructure; cybersecurity; V2X application priority; and the future of V2X and connected technologies.

ITS America supports preserving the 5.9 GHz safety spectrum band for V2X transportation technologies, allowing newer V2X technologies such as Cellular Vehicle-to-Everything (C-V2X) to operate in the band, and protecting V2X spectrum from interference related to out-of-band emissions. ITS America advocates for the continued development and deployment of connected vehicle technologies so that we can realize the significant safety, environmental, and economic benefits that a robust V2X network will provide.

**2.1 ITS America's V2X Principles:** V2X technologies enable connected vehicle applications that will save lives and provide an enhanced safety layer for automated driving system applications. These technologies need dedicated spectrum that is free from harmful interference to ensure uninterrupted low-latency, high-speed communications. These V2X Principles guide ITS America's approach to V2X technologies and the 5.9 GHz band.

- Vehicular, infrastructure, and vulnerable road user communications will include existing publicly available telecommunications mediums (such as cellular, satellite, and other wireless communications) as well as high-speed/low-latency/dedicated mediums (such as DSRC or C-V2X). Some applications will only be possible in licensed spectrum scenario due to safety-of-life concerns.
- V2X Communications (including vehicle-to-vehicle, vehicle-to-infrastructure, and vehicle-to-pedestrian and other vulnerable road users) will enable CV applications that can save lives. Every year that goes by, more lives are lost unnecessarily. We need a heightened sense of urgency concerning deployment from both the public and private sector.
- V2X Communications will provide an enhanced safety layer for automated driving system applications currently in development or in production for vehicles of all types (automobiles, trucks, and transit vehicles). Sensors alone are good, but cooperative (CAV) is better.
- Any licensed spectrum for V2X Communications should be free from harmful interference on both sides of the band, in order to ensure high reliability connectivity in safety-of-life applications.
- We urge the Federal Communications Commission (FCC) to consult with transportation safety experts to ensure their actions are evidence-based, consistent with real-world experience. The FCC used flawed logic in its decision-making to significantly reduce the amount of licensed spectrum available for V2X Communications. The history of use in the 5.9 GHz band, economic analyses, interference calculations, and general understanding of how V2X will be utilized were all misrepresented in the recent draft Report & Order that was voted on by the FCC on Nov 18, 2020.
- The full 75 MHz of the 5.9 GHz band must be preserved for V2X Communications. Our Future of V2X Working Group has analyzed application needs and 30 MHz is not sufficient - if the current FCC action proceeds, additional spectrum must be identified urgently.
- The US DOT should be considered an expert-on-record for the FCC concerning this issue and their feedback should be taken into account for future decision-making in the 5.9 GHz band.

**2.2 Preserve the 5.9 GHz Spectrum for Vehicle-to-Everything (V2X) Safety Transportation Communications and Grow Investments in Vehicle-to-Infrastructure (V2I) and Vehicle-to-**

**Pedestrian (V2P) Technologies:** USDOT is working with industry 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 V2X – such as Dedicated Short Range Communications (DSRC) as well as Cellular Vehicle-to-Everything (C-V2X). V2X technologies enable real-time crash-avoidance alerts and warnings – offering a significant opportunity to achieve a transformation in transportation safety. V2X technologies are not only saving lives, they are improving the operational performance of our roads – weather and pavement condition, how signals are directing traffic, and even the location of potential hazards at intersections and other critical road safety hotspots.

Dedicated spectrum is necessary to guarantee low-latency, high-speed communications to support mission critical crash avoidance, driving automation, and active traffic management. The FCC’s proposal to giving away a majority of that spectrum was made without data or analysis. The FCC is prepared to sacrifice safer roads so that unlicensed devices can operate in the 5.9 GHz band. USDOT’s research shows that this proposal would likely cause significant interference with V2X technologies operating in the remaining spectrum, which could in effect render the spectrum unusable for transportation safety. Immediate actions:

- Support policy in the reauthorization of the FAST Act that makes clear the 5.9 GHz band is preserved 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.
- Under the Advanced Transportation and Congestion Management Technologies Deployment Program (ATCMTD), increase 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) and support policy that makes V2P technologies an eligible activity under ATCMTD at 100% federal share. Amend 23 USC § 503(c)(4)(E) to include advanced vulnerable road user safety information systems. Amend 23 USC § 503(c)(4)(J) to allow up to 100% federal share of the cost of a project.

### 3. Automated Vehicles

Automated vehicles (AVs) have enormous potential to improve roadway safety and performance and contribute to more livable, vibrant, and equitable communities by providing more affordable mobility options; improving transit access by extending its reach; improving freight movement; and freeing up parking for other needs, including transit corridors, bike lanes, and walkable places, including sidewalks and plazas. AVs can provide mobility options for people with disabilities and seniors, as well as access for underserved communities. ITS America supports policies and regulatory frameworks that facilitate the safe testing, deployment, and integration of automated vehicles into the surface transportation system and address highly automated vehicles (HAVs), self-driving trucks, automated transit, workforce impacts and mitigation strategies, and land use and transportation system integration.

HAV technology is accelerating rapidly. More than 80 companies across 36 states and Washington, DC, are testing HAVs. As a result, ITS America strongly believes a federal framework is needed to ensure their



safe deployment. The absence of such a framework is leading to states developing their own HAV requirements. ITS America urges the Administration to work with Congress on a bipartisan highly automated vehicle bill that maintains the federal government's traditional role over design, construction, and performance of highly automated vehicles; preserves state and local authority over its roads, including traffic laws and rules of the road; and makes clear that "performance" is consistent with the National Traffic and Motor Vehicle Safety Act related to vehicle or equipment performance and is not intended to be broadened beyond the National Highway Traffic Safety Administration (NHTSA) traditional interpretation.

ITS America supports a safe and reasonable increase in the number and duration of Federal Motor Vehicle Safety Standard exemptions because developers, working with NHTSA, cities, counties, and states, need experience operating HAVs in sufficient numbers to generate the broad data across a multitude of scenarios and environmental operating conditions necessary to ensure safety. We also urge federal regulators to work with states, localities, public transit, manufacturers, and other entities on regulations that ensure the safe deployment of HAVs, including land use, infrastructure, and transportation system integration.

**3.1 Establish the Foundation for the Safe Deployment of Automated Vehicles:** Highly automated vehicles require testing on roads before they can be proven for commercial use, despite their promise. Public confidence in the safety of the technology must be first achieved and then expanded for the technology to succeed commercially. Industry and the research community must focus their efforts on creating a comfort level regarding safety assurance, testing, and deployment.

ITS America believes that federal, state, and local agencies can provide maximum flexibility to allow for testing to establish a definitive safety track record. As these technologies are proven out, industry—driven by data—can establish common safety standards regarding safety assurance, performance, and operational design standards. "Partially" automated vehicles such as "Autopilot" Advanced Driver Assistance Systems (ADAS) already are commercially available; therefore, industry, regulators, and safety advocates must educate drivers on the limitations of the technology and risks of misuse. Immediate actions:

- Build public confidence by achieving broad industry participation in the NHTSA Automated Vehicles Policy, guidance, or standards development process. Revise the guidance where it serves that purpose.
- Engage with industry, states and local authorities, safety regulators, and advocates to address their concerns about safety such as testing as well as to help them in establishing processes that would help the transition from testing to larger scale deployment.
- Advocate for changes or clarifications to Federal Motor Vehicle Safety Standards or other authorities to support new technologies (e.g. for Automated Vehicle, ADAS, visibility, accessibility, lighting, etc.).
- Support legislation in Congress that affirms existing roles and maintains the balance of responsibilities among states, local governments, and the federal government. ITS America's policy position is that design, construction, or performance may not be construed to prohibit a state or local government from requiring HAVs to comply with traffic laws and rules. Furthermore, performance is consistent with the National Traffic and Motor Vehicle Safety Act related to vehicle

or equipment performance and is not intended to be broadened beyond NHTSA's traditional interpretation, which excludes vehicle compliance with or the enforcement of state and local traffic laws and rules.

- Support legislation in Congress that expands NHTSA's authority in granting exemptions to Federal Motor Vehicle Safety Standards (FMVSS), specifically expansion of the number and duration of exemptions allowed under the law, understanding that real-world data can be generated to inform the safe deployment of automated vehicles.
- Require NHTSA to work with states, local governments, manufacturers, and other entities on regulations that ensure the safe testing and deployment of HAVs.
- Support the inclusion of trucks in any regulatory or legislative framework that directs the development and testing of automated vehicle technologies.
- Support flexibility of transit agencies to use federal funding to deploy automated vehicles to support public transportation services. Support policy that would permit transit agencies the flexibility to advance innovative services that have been supported by Federal Transit Administration (FTA) and USDOT grants. Support transit agencies as they consider how to develop a workforce development plan describing how automated vehicles will affect transit workers.
- Make safety databases required of Automated Driving System (ADS) Demonstration Grants eligible for ATCMTD funding.
- Expand efforts to respond to emerging cybersecurity threats with regards the testing and deployment of automated vehicles and automated driving systems.

## 4. Mobility on Demand

The transportation sector in communities across the nation is undergoing historic transformations with the promise of greatly boosting the safety, access, equity, and sustainability of our transportation system. Mobility is less about moving vehicles and more about moving people, data, and freight. If COVID-19 has demonstrated anything, it is how dynamic, flexible mobility is necessary to keep America moving. From calling a Lyft or Uber that is providing nighttime service so transit agencies can surge drivers to daytime, to providing free scooter or bike rides for essential workers, to standing up a new microtransit route to provide better coverage and accelerating the installation of infrastructure that supports better public health or workforce outcomes, these mobility services and the partnerships with cities and transit agencies show how on-demand mobility services are embedded into our transportation ecosystem.

ITS America, through the Mobility on Demand (MOD) Alliance, supports a MOD program with funding that encourages flexibility with federal transportation funding 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. This includes making it clear that MOD should leverage public transportation investment

while adding new terms in Title 49 and 23 U.S. Code that define MOD services such as micromobility, ridesourcing, ridesharing, and microtransit as eligible partnerships and included in new programs.

**4.1 Establish a Mobility on Demand 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, and 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 should be accessible for every traveler in all communities and neighborhoods. In cities, 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 ridesourcing 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. Immediate actions:

- Support increased federal formula-based and non-formula funding to public transit. The backlog of transit state-of-repair needs is more than \$90 billion and growing. A safe, efficient, and modern transit system will be a key component in any successful implementation of MOD. Support policy that makes clear MOD should leverage public transportation investment.
- Support a MOD program with funding that encourages flexibility with federal transportation funding 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.
- Support policy that makes clear that accessibility, equity, and opportunity are foundational pillars of MOD. Support policy that makes clear that investment in MOD is an investment toward cleaner air.
- Add new terms to 49 USC § 5302. Definitions for public transportation related to Mobility on Demand services such as micromobility, ridesourcing, ridesharing, microtransit such as expanding eligibility of bicycle and micromobility storage shelters. Recommend adding to 49 USC § 5302(3)(K) to include the eligibility of capital support and operations hardware and software, including computer hardware and software, data services hardware and software, operations and vehicle diagnostic hardware and software, and other equipment that enhances operating efficiency. Add new (O) under 49 USC § 5302(3) that enables new or expanded reservation, fare, automation, or delivery designs to improve operations and options in public transportation.

- Add a new eligibility (E) under section (a)(1) in 49 USC § 5307 Urbanized Area Formula Grants consistent with 49 USC § 5311 formula grants for rural areas for the acquisition of public transportation services, including service agreements with private providers of public transportation service.
- Allow for MOD vehicle miles to be included in the National Transit Database and understanding that there is difficulty including them in the calculation for formula funds, direct the Secretary to conduct a study and develop recommendations regarding the inclusion of such vehicle revenues miles data to be used in the calculation described in 49 USC § 5336. Apportionment of Appropriations for Formula Grants.
- Amend 49 USC § 5303 Metropolitan Transportation Planning, 23 USC § 134 Metropolitan Transportation Planning and 23 USC § 135 Statewide and Nonmetropolitan Transportation Planning to include shared mobility options including, but not limited to, ridesourcing, microtransit, micromobility, shared automated services, and Mobility on Demand services, as well as consultation with Mobility on Demand private mobility providers.
- Expand MOD services to be supportive of paratransit services. This is especially applicable for rural communities where limited public transportation service and significant distances to health care providers present challenges. Policy would support the consideration of funds to be made available to assist transit agencies in setting up on-demand paratransit systems.
- Support flexibility of transit agencies to use federal funding to deploy automated vehicles to support public transportation services. Support policy that would permit transit agencies the flexibility to advance innovative services that have been supported by Federal Transit Administration (FTA) and USDOT grants.
- Support transit agencies in creating workforce development plans that outline how automated vehicles and Mobility on Demand will affect transit workers.
- Allow for the Secretary of Transportation to create a Buy America waiver for MOD vehicles to include personal vehicles owned by individuals (permanent), personal vehicles (up to 12 passengers) not owned by individuals/fleet (over a set period of time), bicycle, e-bicycle, and scooter (over a set period of time), and automated vehicles not owned by individuals/fleet (over a set period of time).
- Add new terms to the definition of transit capital projects under 23 USC § 133 (b)(1)(C) eligibility under chapter 53 of title 49 Mobility on Demand services such as micromobility, ridesourcing, ridesharing, microtransit such as expanding eligibility of bicycle and micromobility storage shelters. Recommend adding capital support and operations hardware and software, including computer hardware and software, data services hardware and software, operations and vehicle diagnostic hardware and software, and other equipment that enhances operating efficiency. Recommend adding new or expanded reservation, fare, automation, or delivery designs to improve operations and options in public transportation. Add to (b)(2) "Mobility Services." New

language: (2) Operational improvements and capital and operating costs for traffic “and mobility services” monitoring, management, and control facilities and programs.

- Amend 23 USC § 146 to focus on shared mobility in addition to car/vanpool. New language: (a) In order to conserve fuel, decrease traffic congestion during rush hours, improve air quality, and enhance the use of existing highways and parking facilities, the Secretary may approve for federal financial assistance from funds apportioned under section 104(b)(2) of this title, projects designed to encourage the use of “shared-ride surface transportation services to include carpool/vanpool, shared ridesourcing, microtransit, shared fleet micromobility, as well as shared automated services.” (As used hereafter in this section, the term “shared ride”.) Such a project may include, but is not limited to, such measures as providing shared ride opportunities to the elderly and handicapped, systems for locating potential riders and informing them of convenient shared ride opportunities, acquiring vehicles appropriate for shared ride use, designating existing highway lanes as preferential shared ride highway lanes, providing related traffic control devices, and designating existing facilities for use as preferential parking for shared ride services.
- Amend 23 USC § 149 to expand the definition of mobility options to include MOD services such as micromobility, ridesourcing, ridesharing, microtransit. Amend (b)(4) to establish or operate a traffic “and mobility” monitoring, management, and control facility or program, including advanced truck stop electrification systems, if the Secretary, after consultation with the Administrator of the Environmental Protection Agency, determines that the facility or program is likely to contribute to the attainment or maintenance in the area of a national ambient air quality standard; (b)(5) if the program or project improves traffic flow, including projects to improve signalization, “vehicle connectivity, improved infrastructure and asset management (i.e. curb usage or parking to improve efficient utilization),” construct high occupancy vehicle lanes, improve intersections, add turning lanes, improve transportation systems management and operations that mitigate congestion and improve air quality, and implement ITS strategies and such other projects that are eligible for assistance under this section on the day before the date of enactment of this paragraph, including programs or projects to improve incident and emergency response or improve mobility, such as through real-time traffic, transit, and multimodal traveler information.
- Support 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.
- Make permanent and increase funding for the FTA MOD Sandbox demonstration grant program, which experienced overwhelming demand for innovative approaches to integrating emerging mobility solutions within a public transportation framework. Increase funding in 49 USC Chapter 5, Section 5338 for the Public Transportation Innovation authority under Section 5312(b). Support increasing funding for the Transit Cooperative Research Program (TCRP).
- Establish within 49 USC § 5312 Public Transportation Innovation Program new funding for a mobility innovation grant research program for new mobility programs or continued deployments. The fiscal year 2022 funding would be \$25 million, the fiscal year 2023 funding would be \$50 million, the fiscal year 2024 funding would be \$75 million, and fiscal years 2025

through 2027 would be \$100 million annually. Support a study through the National Academy of Sciences on the integration of MOD options with public transportation systems with recommendations that foster the efficient use of capacity, enhanced operations, and management of new modes of mobility, and promote the creation of innovative planning tools.

## 5. Emerging Technology

There is significant recent development of emerging technology in transportation, including technology related to rapid speed travel Hyperloop, urban air mobility and cargo delivery, automated cargo delivery, and blockchain and integrated technology platforms.

ITS America encourages the use of a “complete streets” design approach to integrating unmanned ground delivery systems. ITS America supports addressing constraints to unmanned-aerial-vehicle (UAV) development and deployment in the next Federal Aviation Administration (FAA) reauthorization, to encourage additional testing and develop safety management models through partnerships at the state and local levels to promote the integration of UAVs. ITS America supports further exploration of emerging technologies such as Hyperloop that could provide high-speed transportation and a thoughtful regulatory approach to ensure the safety of, and provide permitting opportunities for, such technology.

ITS America’s Emerging Technologies Standing Committee has prioritized advancing forthcoming policy related to personal delivery devices (PDDs) and digital twinning. PDDs (robotic delivery) are allowed to operate under specific regulations in roughly 48 percent of states and the District of Columbia. These robotic ground deliveries directly interface with the traveling public and the existing transportation infrastructure.

Digital twinning is the creation of a digital replica of a design or system. The replica is then used to test various scenarios to find “edge” situations where the system breaks down and to provide feedback into the system to enhance design or operations. In transportation, digital twinning can provide better management of assets and maximize the efficiency of the system. Transportation digital twinning can be used to enhance fleet operations, optimize infrastructure network operation, improve demand management for the power grid, and adjust construction staging.

The Emerging Technologies Standing Committee will examine how these systems operate in tandem with our existing systems and transportation users. As these new technologies grow, they provide new considerations and opportunities for planning, design, safety, sustainability, operations, and partnerships.

**5.1 Work with Industry and Policymakers to Advance Applied and General Artificial Intelligence (AI) to Improve Transportation:** Advocate for appropriately applied AI research and data sharing related to safety and security engineering and identify and address rare, dangerous, or ethically challenging AI scenarios. Monitor progress with general AI, directing attention to potential long-term positive and negative disruptive economic impacts.

**5.2 Expand Freight Mobility by Establishing Unconventional Systems, such as Personal Delivery Devices (PDDs) and Unmanned Aerial Vehicles (UAVs), and High-Speed Guided Systems as New Modes of Freight Transportation:** There are incredible concepts that need further exploration. Unique, long-



range, high-speed guided mobility systems such as Hyperloop, if economics support it, should be explored. “Last mile” mobility systems should also be more closely examined. The last mile is the most cumbersome and expensive part of package delivery. New robotic systems under development such as wheeled delivery robots or low-altitude UAVs to address the last-mile could fundamentally change logistics and retail services. Recent FAA regulations to allow commercial use of UAVs support traffic reporting and other transportation remote sensing applications but fall short of what is needed to support expanded freight mobility. Restrictions prohibiting “beyond visual range” operation and possibly other limits will hamper commercialization of UAVs. Work needs to take place to expand testing and operations of UAVs. Immediate actions:

- Address constraints to UAVs in next FAA reauthorization and encourage testing and safety/traffic management models for industry and public sector cooperation. Encourage exploration of operational concepts and partnerships at the state and local level to promote integration of UAVs.
- For ground delivery unmanned robots, encourage a “complete streets” design approach to their integration.
- Working with federal, state, and local governments, encourage thoughtful consideration of permitting and safety assurance for unique long-range high-speed guided mobility systems such as Hyperloop.

## 6. Sustainability and Resiliency

It is important to act now to enhance the sustainability and resiliency of our transportation system to reduce transportation’s outsized impact on the environment and to protect infrastructure from severe weather events and other effects of climate change. There are numerous opportunities to increase the sustainability and resiliency of the transportation system, including through the advancement of electric vehicles and alternative fuel technologies, charging infrastructure, clean power generation, power grid capability and resiliency, infrastructure resiliency, roadside management, and advanced materials technologies. Investments in the deployment of technology and workforce development in these areas will also provide significant economic and employment benefits as the United States becomes a global leader in sustainable and resilient transportation. A more sustainable transportation system will also improve equity by helping to mitigate the negative environmental impacts of transportation, which are often most acutely felt in low-income and minority communities.

ITS America supports additional investments in sustainable transportation, including providing funding for the deployment of electric vehicle charging and hydrogen fueling infrastructure, increasing investment in electric vehicle charging and alternative fuel technologies research, maintaining and enhancing electric vehicle tax credits for personal, passenger, and freight vehicles, reinstating a zero-emission consumer tax credit for fuel cell vehicles, creating additional allocation of zero-emission plug-in electric vehicle tax credits reserved for medium-duty commercial delivery vans, and supporting investment in the electrification of public transportation.

ITS America is currently undertaking a policymaking process to expand and enhance our sustainability and resiliency policy. The forthcoming policy will address topic areas such as electrified vehicles, charging infrastructure, power generation, power grid capability and resiliency, infrastructure resiliency, roadside management, advanced materials technologies, mobility efficiency, and transportation sector emissions.



### **6.1 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. According to a 2017 U.S. Department of Energy (DOE) report, the U.S. will require 600,000 Level 2 plugs and 25,000 DC fast charger plugs by 2030 to fuel the electric market alone. Additionally, a 2017 study commissioned by DOE found that a network of 1,500 to 3,300 hydrogen stations would be needed to serve a market of millions of fuel cell vehicles by 2035. Immediate actions:

- Establish a 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.
- Support policy that increases 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.
- Support policy that maintains the zero-emission plug-in electric vehicle tax credit. Provide an additional allocation of zero-emission plug-in electric vehicle tax credits reserved for medium-duty commercial delivery vans.
- Support policy that reinstates a zero-emission consumer tax credit for the purchase of fuel cell vehicles.
- Amend federal law to allow for public electric vehicle charging stations to be installed at rest areas, park-and-rides along federal-aid and Interstate rights-of-way, and state or city property subject to local zoning.

### **6.2 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. For example, a high-speed communications infrastructure backbone would support near-term congestion-reduction and air quality improvement strategies like smart traffic signal operations while laying the foundation for future Vehicle-to-Vehicle and Vehicle-to-Infrastructure communications.

- Establish 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.
- In lieu of a new program, the next bill should provide resources for 21st century transportation investments through existing FAST Act programs by expanding project eligibility within these programs.
- Support 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 facilities (conversion and/or removal of existing lighting systems to high efficiency technologies, alternative fueling infrastructure, maintenance buildings, rest areas, etc.) on-site (including through net metering) or off-site through off setting electricity bills at other sites.

### **6.3 Support a national Vehicle Miles Traveled (VMT) Pilot Program:**

- Support a national VMT pilot program and support and expand the existing state pilot programs to test the viability of a VMT user fee collection system. The programs should, at a minimum, consider equity among users, determine the efficiency in collection of fees and address any diversion of revenue, and resolve driver privacy issues.
- In connection with a national VMT pilot, include large freight shippers as participants and examine if fleet telematics can be used as a method of data collection.