



FOREWORD

I stepped into this role at a critical time, and I am proud to be leading the Intelligent Transportation Society of America (ITS America). As a working mother of three, I am passionate about the work we do every day because of the difference we can make in people's lives.

Why is what we do so important? Our impact in transportation goes far beyond the system we operate. Transportation is foundational to access opportunity. It is a key connector to economic opportunity, healthcare, education, critical services and goods, and our overall social interaction and well-being.

For communities across the nation, transportation is an essential component of economic inclusion and a contributor to a stronger society for everyone. Also essential is technology – it is a tool that can truly transform transportation and help us create opportunities for everyone, no matter who they are or where they live. We must, however, be thoughtful and intentional to ensure the benefits of technology are realized by all.

In passing the Infrastructure Investment and Jobs Act, Congress has set in motion historic investments that will be integral to bringing about this change. Expanded Technologies are eligible under this new law - but investing in them is a choice.

ITS America and our members were instrumental in ensuring critical technologies were made eligible for funding, including in the areas of cybersecurity and Mobility on Demand, key safety priorities, alternative fueling infrastructure, congestion relief, broadband deployment, and additional research funding.

The status quo is not working:

- In the first half of 2021, NHTSA estimated that more than 20,000 people died on our roadways an 18.4 percent increase from the same period in 2020 and the largest six-month jump on record. Vulnerable road users continue to be at greater risk the Governors Highway Safety Association estimated pedestrian deaths increased 4.8 percent in 2020. This is despite a 13 percent reduction in vehicle-miles-traveled.
- Transportation accounts for 29% of all greenhouse gas emissions in the United States the largest of any sector at a time when climate reports are increasingly dire. Emissions are polluting neighborhood air and resulting in higher rates of childhood asthma and early mortality, disproportionally affecting people in minority and low-income communities across the country.
- On average, Americans lose 100 hours a year due to congestion and that congestion wastes 8.8 billion hours and 3.3 billion gallons of fuel, at a cost of more than \$140 billion each year.

This is our opportunity to build a digital layer over our physical infrastructure and power our technology-driven 21st century economy. If we choose to invest in technology, we can create the kind of outcomes ITS America's vision contemplates: eliminating or reducing the severity of up to 80 percent of non-impaired crashes by deploying V2X technologies, which will also significantly decrease congestion and emission levels; combatting climate change and alleviating negative health outcomes through electrification and wider use of public transit and alternative transportation modes; and connecting more people and neighborhoods to opportunity - through ondemand mobility options as well as automated and autonomous vehicles, which provide needed transportation and food for those who do not have access to either and the freedom that comes with mobility for people with disabilities and those who are aging.

This is a pivotal moment. Our path is clear – investments in technology will bring us closer to our vision: a better future transformed by intelligent mobility – one that is safer, greener, smarter, and more equitable.

Laura D. Chace

ITS America

President and CEO

ACKNOWLEDGEMENTS

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- Tina Quigley, former CEO, Regional Transportation Commission of Southern Nevada, Vice Chair (2020)
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- Cordell Schachter, former Chief Technology Officer, New York City Department of Transportation, and
- Current Vice Chair Ted Bailey, Cooperative Automated Transportation Program Manager, Washington State
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MEMBERS

Our members include state and city departments of transportation, regional and local transportation and planning agencies, private companies providing ITS products and services, auto manufacturers and suppliers, research organizations, academic institutions, and industry associations.

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, Econolite, Florida Department of Transportation, Ford Motor Company, General Motors, Google, 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.

SYNOPSIS OF TECHNOLOGY PROGRAMS AND ELIGIBILITY WITHIN PROGRAMS

The Infrastructure Investment and Jobs Act (IIJA) includes many new opportunities to deploy intelligent transportation technologies, for which ITS America members have strongly advocated, including maintaining the 2015 Fixing America's Surface Transportation (FAST) Act technology eligibility. ITS America led the advocacy effort to expand technology eligibility in IIJA to many additional USDOT programs, for example, the first-time eligibility for cybersecurity under the National Highway Performance Program and Surface Transportation Block Grant Program. The following is a synopsis of key programs in the infrastructure bill and transportation technology eligibility or inclusion within those programs. Programs are listed under each section in the order in which they appear in the bill.

SMART INFRASTRUCTURE

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E	ECTED, AUTOMATED, AND EMERGING TECHNOLOGIES	
	Federal Share Payable (11107) – federal share payable of up to 100 percent for vehicle-to-	- 0
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•	Research on Connected Vehicle Technology (24219) – research to examine how connected vehicle
	systems can account for bicyclists and pedestrians Page 20
•	Strengthening Mobility and Revolutionizing Transportation Grant Program (25005) - coordinated
	automation, connected vehicles, and intelligent sensor-based
	infrastructure Page 21
•	Coordination on Emerging Transportation Technology (25008) – establishes the Nontraditional and
	Emerging Transportation Council
MOBIL	ITY ON DEMAND
•	Congestion Mitigation and Air Quality Improvement Program (11115) – micromobility, including bike
	shares and shared scooters
•	Public Transportation (11130) – construction or installation of traffic signaling, prioritization systems,
	and fare collection systems for a bus rapid transit corridor or dedicated bus lanes Page 9
	Rural Surface Transportation Grant Program (11132) – transportation demand management system
	and on-demand mobility services
	Bicycle Transportation and Pedestrian Walkways (11133) – makes eligible bicycle and shared
	micromobility infrastructure
	Congestion Relief Program (11404) – technology use for on-demand microtransitPage 12
	Advanced Transportation Technologies and Innovative Mobility Deployment Program (13006)
	– research on the impacts of new mobility including micromobility Page 17
SUSTA	AINABILITY & RESILIENCY
	Surface Transportation Block Grant Program (11109) – installation of electric vehicle charging
	infrastructure and vehicle-to-grid infrastructure
	Grants for Charging and Fueling Infrastructure (11401) – deploy publicly accessible electric
	vehicle charging, hydrogen fueling infrastructure, and natural gas fueling
	Reduction of Truck Emissions at Port Facilities Program (11402) – emerging technologies that reduce
	emissions from idling trucks
	Carbon Reduction Program (11403) – advanced transportation and congestion management
	technologies, infrastructure-based intelligent transportation systems, and V2I
	Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation
	(PROTECT) Program (11405) – communications and intelligent transportation system equipment and
	infrastructure, including funding for transitioning stranded DSRC infrastructure assets to C-V2X
	technology
	Report on Emerging Alternative Fuel Vehicles and Infrastructure (11511) – report to help guide
	future investments for emerging alternative fueling infrastructure Page 14

•	iransportation Resilience and Adaptation Centers of Excellence (13009) – research and development				
	of new materials and technologies that could be integrated into the transportation				
	systemPage 18				
•	Electric Vehicle Working Group (25006) – incorporating electric vehicles into the nation's transportation				
	systemPage 21				
•	Clean School Bus Program (71101) – replacement of school buses with zero emission and alternative				
	fuel school buses				
A significantly increases funding for two existing competitive grant programs					
	onsider the extent to which an applicant applies innovative technology:				
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•	Nationally Significant Freight and Highway Projects Program (11110) – known as "INFRA," \$8 billion
	over five years, including projects that apply innovative technology
•	Local and Regional Project Assistance (21202) – known as RAISE (formerly known as BUILD and TIGER),
	would create, for the first time, a statutory basis, \$7.5 billion over the life of the program,
	including for projects that include innovative
	technologies

INFRASTRUCTURE INVESTMENT AND JOBS ACT

SEC. 11105. NATIONAL HIGHWAY PERFORMANCE PROGRAM

Makes eligible measures to protect segments of the National Highway System from cybersecurity threats

Funding average per year \$29.6 billion per year from Highway Trust Fund

SEC. 11107. FEDERAL SHARE PAYABLE

 Makes Federal share payable of up to 100 percent for Vehicle-to-Infrastructure (V2I) for work zones prior to or during roadway construction activities

SEC. 11109. SURFACE TRANSPORTATION BLOCK GRANT PROGRAM

- Makes measures to protect a transportation facility otherwise eligible for assistance under this section from cybersecurity threats
- Makes eligible installation of electric vehicle charging infrastructure and vehicle-to-grid infrastructure
- Makes eligible the installation and deployment of current and emerging intelligent transportation technologies, including the ability of vehicles to communicate with infrastructure, buildings, and other road users
 - o Funding average per year is \$12.96 billion from the Highway Trust Fund

SEC. 11110. NATIONALLY SIGNIFICANT FREIGHT AND HIGHWAY PROJECTS

- Renames the Nationally Significant Freight and Highway Projects (NSFHP) program (also known as the INFRA grant program) to be the Nationally Significant Multimodal Freight and Highway Program (NSMFHP) and amends it by raising the cap on eligible multimodal projects to 30 percent of the amounts made available for grants in each of fiscal years 2022 through 2026.
 - o Funding average per year is \$1.6 billion

SEC. 11115. CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM

- Makes eligible shared micromobility, including bikesharing and shared scooters systems
- Makes eligible the purchase of medium- or heavy-duty zero emission vehicles and related charging equipment
 - o Funding average per year is \$2.64 billion from the Highway Trust Fund

SEC. 11118. BRIDGE INVESTMENT PROGRAM

- Innovative technologies will be a factor in evaluating applications for competitive grant programs to assist State, local, Federal, and tribal entities in rehabilitating or replacing bridges, including culverts, and eligibility for large projects and bundling of smaller bridges
- Requires that at least 50 percent of the program support bridges with total eligible project costs of more than \$100 million
 - o Funding average is \$5.5 billion per year from the Highway Trust Fund and \$2.5 billion from the General Fund

SEC. 11122. VULNERABLE ROAD USER RESEARCH

- Directs the Federal Highway Administration (FHWA) to establish a research plan to prioritize research on roadway designs, the development of safety countermeasures to minimize fatalities and serious injuries to vulnerable road users, and the promotion of bicycling and walking
 - Includes research relating to roadway safety improvements, the impacts of traffic speeds, and tools to evaluate the impact of transportation improvements on projected rates and safety of bicycling and walking

SEC. 11130. PUBLIC TRANSPORTATION

• Makes eligible the construction or installation of traffic signaling, prioritization systems, and fare collection systems for a bus rapid transit corridor or dedicated bus lanes

SEC. 11132. RURAL SURFACE TRANSPORTATION GRANT PROGRAM

- Establishes a rural surface transportation grant program to provide grants on a competitive basis to eligible entities to improve and expand the surface transportation infrastructure in rural areas
- Technology project eligibility includes:
 - o Projects that develop, establish, or maintain an integrated mobility management system
 - o Transportation demand management system
 - On-demand mobility services
 - Grants under the program will be at least \$25,000,000, and the federal share will be at least 80 percent, and up to 100 percent for projects on the Appalachian Development Highway System
 - No more than 10 percent of funds may be used for projects smaller than \$25,000,000, and at least 25 percent of funds will be reserved for projects that further the completion of designated routes of the Appalachian Development Highway System
 - Funding is \$400 million per year from the Highway Trust Fund

SEC. 11133. BICYCLE TRANSPORTATION AND PEDESTRIAN WALKWAYS

- Makes eligible bicycle and shared micromobility
- The definition of electric bicycle is a bicycle that is equipped with fully operable pedals, a saddle or seat for the rider, and an electric motor of less than 750 watts; that can safely share a bicycle transportation facility with other users of such facility; and that is a class 1, class 2, or class 3 electric bicycle. Classes of electric bicycles are:
 - 1. Class 1 Electric Bicycle: an electric bicycle, other than a class 3 electric bicycle, equipped with a motor that—(I) provides assistance only when the rider is pedaling; and (II) ceases to provide assistance when the speed of the bicycle reaches or exceeds 20 miles per hour
 - 2. Class 2 Electric Bicycle: an electric bicycle equipped with a motor that may be used exclusively to propel the bicycle; and is not capable of providing assistance when the speed of the bicycle reaches or exceeds 20 miles per hour
 - 3. Class 3 Electric Bicycle: an electric bicycle equipped with a motor that provides assistance only when the rider is pedaling; and ceases to provide assistance when the speed of the bicycle reaches or exceeds 28 miles per hour

SEC. 11135. UPDATES TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

- Directs the Secretary of Transportation to update the MUTCD, and to include updates:
 - Protection of vulnerable road users (as defined in section 148(a) of title 23, United States Code)
 - Supporting the safe testing of automated vehicle technology and any preparation necessary for the safe integration of automated vehicles on public streets
 - Appropriate use of variable message signs to enhance public safety; and updates on the minimum retroreflectivity of traffic control devices and pavement markings
- Require that the Manual on Uniform Traffic Control Devices be updated every four years

SEC. 11304. INTELLIGENT TRANSPORTATION SYSTEMS

- Requires the Secretary to develop guidance for using existing flexibilities with respect to the systems engineering analysis
- Requires the Secretary to ensure that the guidance clarifies criteria for low-risk and exempt intelligent transportation system projects to minimize unnecessary delays or paperwork burdens

SEC. 11401. GRANTS FOR CHARGING AND FUELING INFRASTRUCTURE

• Establishes a grant program to deploy publicly accessible electric vehicle charging infrastructure, hydrogen fueling infrastructure, propane fueling infrastructure, and natural gas fueling infrastructure along

- designated alternative fuel corridors or in certain other locations that will be accessible to all drivers of electric vehicles, hydrogen vehicles, propane vehicles, and natural gas vehicles
- Grants for the alternative fuel corridors are to be used to contract with a private entity for acquisition and installation of publicly accessible alternative fuel vehicle charging and fueling infrastructure that is directly related to the charging or fueling of a vehicle
 - Such infrastructure is to be located along an alternative fuel corridor either designated under section 151, or by a State or group of States
 - o The Federal cost-share for a project may not exceed 80 percent
 - As a condition of contracting with an eligible entity, a private entity must agree to pay the non-Federal share of project costs
 - Eligible entities may use a portion of grant funds to provide a private entity operating assistance for the first 5 years of operations after infrastructure installation
 - Considerations for receiving a grant include information on protecting personal privacy and cybersecurity; and how infrastructure installation can be responsive to technology advancements, such as accommodating autonomous vehicles, vehicle-to-grid technology, and future charging methods
 - Funds may be used to acquire and install traffic control devices located in the right-of-way to provide directional information to publicly accessible electric vehicle charging infrastructure, hydrogen fueling infrastructure, propane fueling infrastructure, or natural gas fueling infrastructure acquired, installed, or operated with the grant
 - Eligibility includes propane fueling infrastructure, but limits it to infrastructure for mediumand heavy-duty vehicles
- 50 percent of the total program funds will be made available each fiscal year for Community Grants, to install EV charging and alternative fuel in locations on public roads, schools, parks, and in publicly accessible parking facilities
 - o Grants will be prioritized for rural areas, low-and moderate-income neighborhoods, and communities with low ratios of private parking, or high ratios of multiunit dwellings
 - Funding average is \$1 billion per year from the Highway Trust Fund

SEC. 11402. REDUCTION OF TRUCK EMISSIONS AT PORT FACILITIES

- Establishes a grant program to reduce idling and emissions at port facilities
 - Requires the Secretary to study how ports would benefit from electrification and to study emerging technologies that reduce emissions from idling trucks
- Any project funded under a grant under this section will be treated as a project on a Federal-aid highway
 - o Funding is \$80 million per year from the Highway Trust Fund

SEC. 11403. CARBON REDUCTION PROGRAM

- Establishes a carbon reduction program to reduce transportation emissions.
- Technology eligible projects include:

- Advanced truck stop electrification systems
- o Advanced transportation and congestion management technologies
- o Infrastructure-based intelligent transportation systems capital improvements
- o Installation of V2I communications equipment
- Deployment of alternative fuel vehicles, including the acquisition, installation, or operation of publicly accessible electric vehicle charging infrastructure or hydrogen, natural gas, or propane vehicle fueling infrastructure
- Eligible projects also include:
 - o Projects or strategies designed to support congestion pricing
 - o Shifting transportation demand to nonpeak hours or other transportation modes
 - o Increasing vehicle occupancy rates or otherwise reducing demand for roads, including electronic toll collection, and travel demand management strategies and programs
 - Allow states and other eligible entities with stranded Dedicated Short-Range Communications (DSRC) infrastructure assets to retrofit those assets to Cellular Vehicle-to-Everything (CV2X) technology
 - MOD projects and strategies to reduce transportation emissions including shared or pooled vehicle trips
 - Funding average is \$1.28 billion per year from the Highway Trust Fund

SEC. 11404. CONGESTION RELIEF PROGRAM

- Establishes a congestion relief program to provide grants to States, local governments, and metropolitan planning organizations for projects in large, urbanized areas to advance innovative, integrated, and multimodal solutions to congestion relief in the most congested metropolitan areas
 - o Allows States and MPOs to compete for grants for eligible projects within urbanized areas containing populations of more than 1,000,000 people
 - Eligible technology use for deployment and operation of a system that implements or enforces high occupancy vehicle toll lanes, cordon pricing, parking pricing, or congestion pricing; and deployment and operation of mobility services, including establishing account-based financial systems, commuter buses, commuter vans, express operations, paratransit, and on-demand microtransit
 - Funding average is \$50 million per year from the Highway Trust Fund

SEC. 11406. PROMOTING RESILIENT OPERATIONS FOR TRANSFORMATIVE, EFFICIENT, AND COST-SAVING TRANSPORTATION (PROTECT) PROGRAM

- Establishes a formula and competitive grant program to help States improve the resiliency of transportation infrastructure
 - Using this program, the DOT will establish Community Resilience and Evacuation Route Grants for projects that strengthen and protect evacuation routes including technology projects, installation of communications, and intelligent transportation system equipment and infrastructure

• Funding average is \$1.46 billion per year from the Highway Trust Fund and \$280 million from the General Fund

SEC. 11504. STUDY OF IMPACTS ON ROADS FROM SELF-DRIVING VEHICLES

- Directs the Secretary to initiate a study on the existing and future impacts of self-driving vehicles to transportation infrastructure, mobility, the environment, and safety, including impacts on the Interstate System, urban roads, rural roads, corridors with heavy traffic congestion, and transportation systems optimization, and any other areas or issues relevant to operations of the FHWA that the Secretary determines to be appropriate
- In carrying out the study, the Secretary will consider the need for and recommend any policy changes to be undertaken by the FHWA on the impacts of self-driving vehicles and for both rural and urban communities, including:
 - o Impacts that self-driving vehicles will have on existing transportation infrastructure, such as signage and markings, traffic lights, and highway capacity and design
 - o Impact on commercial and private traffic flows
 - o Infrastructure improvement needs that may be necessary for transportation infrastructure to accommodate self-driving vehicles
 - o Impact of self-driving vehicles on the environment, congestion, and vehicle miles traveled, and the impact of self-driving vehicles on mobility
- The Secretary will convene and consult with a panel of national experts in both rural and urban transportation
 - o Participants may include operators and users of the Interstate System, including private sector stakeholders; States and State departments of transportation; metropolitan planning organizations; the motor carrier industry; representatives of public transportation agencies or organizations; highway safety and academic groups; nonprofit entities with experience in transportation policy; National Laboratories; environmental stakeholders; and self-driving vehicle producers, manufacturers, and technology developers

SEC. 11510. CYBERSECURITY TOOL; CYBER COORDINATOR

- Requires the FHWA to develop a tool within two years that would assist transportation authorities in identifying, detecting, protecting against, responding to, and recovering from cyber incidents
- Requires the FHWA to use the cybersecurity framework established by the National Institute of Standards and Technology to establish a structured cybersecurity assessment and development program and to provide for a period of public review and comment on the tool
- Requires the FHWA to designate an office as a "cyber coordinator" for monitoring; provide to transportation
 authorities a secure method of notifying a single Federal entity of cyber incidents; monitor cyber incidents
 that affect transportation authorities; alert transportation authorities to cyber incidents that affect those
 transportation authorities; investigate unaddressed cyber incidents that affect transportation authorities;

and provide to transportation authorities educational resources, outreach, and awareness on fundamental principles and best practices in cybersecurity for transportation systems.

SEC. 11511. REPORT ON EMERGING ALTERNATIVE FUEL VEHICLES AND INFRASTRUCTURE

- Not later than 1 year after the date of enactment of this Act, to help guide future investments for emerging
 alternative fueling infrastructure, the Secretary will submit to Congress and make publicly available a report
 that:
 - Includes an evaluation of emerging alternative fuel vehicles and projections for potential locations of emerging alternative fuel vehicle owners during the 5-year period beginning on the date of submission of the report
 - Identifies areas where emerging alternative fueling infrastructure will be needed to meet the current and future needs of drivers during the 5-year period beginning on the date of submission of the report
 - o Identifies specific areas, such as a lack of pipeline infrastructure, that may impede deployment and adoption of emerging alternative fuel vehicles
 - o Includes a map that identifies concentrations of emerging alternative fuel vehicles to meet the needs of current and future emerging alternative fueling infrastructure
 - Estimates the future need for emerging alternative fueling infrastructure to support the adoption and use of emerging alternative fuel vehicles
 - Includes a tool to allow States to compare and evaluate different adoption and use scenarios for emerging alternative fuel vehicles, with the ability to adjust factors to account for regionally specific characteristics

SEC. 13001. STRATEGIC INNOVATION FOR REVENUE COLLECTION

- Directs DOT to provide grants to test the feasibility of a road usage fee and other user-based alternative revenue mechanisms to maintain the Highway Trust Fund's solvency
- Details:
 - Reauthorizes and renames the Surface Transportation System Funding Alternatives Program to continue the program to test the feasibility of a road usage fee and other user-based alternative revenue mechanisms to help maintain the long-term solvency of the Highway Trust Fund through pilot projects at the State, local, and regional level.
 - The Secretary will ensure that, in the aggregate, the pilot projects carried out using funds provided under this section meet the following objectives:

- To test the design, acceptance, equity, and implementation of user-based alternative revenue mechanisms, including among differing income groups, and rural and urban drivers, as applicable
- To provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms
- To quantify and minimize the administrative costs of any potential user-based alternative revenue mechanisms
- To test a variety of solutions, including the use of independent and private third-party vendors, for the collection of data and fees from user-based alternative revenue mechanisms, including the reliability and security of those solutions and vendors
- To test solutions to ensure the privacy and security of data collected for the purpose of implementing a user-based alternative revenue mechanism
- To conduct public education and outreach to increase public awareness regarding the need for user-based alternative revenue mechanisms for surface transportation programs
- To evaluate the ease of compliance and enforcement of a variety of implementation approaches for different users of the surface transportation system
- To ensure, to the greatest extent practicable, the use of innovation
- To consider, to the greatest extent practicable, the potential for revenue collection along a network of alternative fueling stations
- To evaluate the impacts of the imposition of a user-based alternative revenue mechanism on transportation revenues; personal mobility, driving patterns, congestion, and transportation costs; and freight movement and costs
- To evaluate options for the integration of a user-based alternative revenue mechanism with nationwide transportation revenue collections and regulations; toll revenue collection platforms; transportation network company fees; and any other relevant transportation revenue mechanisms
- A State or a group of States; a local government or a group of local governments; or a metropolitan planning organization or a group of metropolitan planning organizations are entities eligible to apply for a grant under this section
- The section also increases the federal share for the program to 80 percent of the total cost of a project carried out by an eligible entity that has not otherwise received a grant under this section, and 70 percent of the total cost of a project carried out by an eligible entity that has received at least 1 grant previously
 - Funding average is \$15 million per year

SEC. 13002. NATIONAL MOTOR VEHICLE PER-MILE USER FEE PILOT

- Require DOT, working with the Treasury Department, to establish a pilot program to demonstrate a national motor vehicle per-mile user fee
- Details:

- Directs the Secretary, in coordination with the Secretary of the Treasury, to establish a pilot program
 to demonstrate a national motor vehicle per-mile user fee to restore and maintain the long-term
 solvency of the Highway Trust Fund and to improve and maintain the surface transportation system
- o In carrying out the pilot program, the Secretary, in coordination with the Secretary of the Treasury, will provide different methods that volunteer participants can choose from to track motor vehicle miles traveled, solicit volunteer participants from all 50 States, the District of Columbia, and the Commonwealth of Puerto Rico, ensure an equitable geographic distribution by population among volunteer participants, and include commercial vehicles and passenger motor vehicles
- o Vehicle-miles-traveled collection tools include:
 - Third-party on-board diagnostic (OBD-II) devices
 - Smart phone applications
 - Telemetric data collected by automakers
 - Motor vehicle data obtained by car insurance companies
 - Data from the States that received a grant under section 6020 of the FAST Act (23 U.S.C. 503 note: Public Law 114–94) (as in effect on the day before the date of enactment of this Act)
 - Motor vehicle data obtained from fueling stations
 - Any other method that the Secretary considers appropriate
- For the purposes of the pilot program, the Secretary of the Treasury will establish, on an annual basis, per-mile user fees for passenger motor vehicles, light trucks, and medium- and heavy-duty trucks, which amount may vary between vehicle types and weight classes to reflect estimated impacts on infrastructure, safety, congestion, the environment, or other related social impacts
- The section also establishes a Federal System Funding Alternative Advisory Board to assist with providing the Secretary with recommendations related to the structure, scope, and methodology for developing and implementing the pilot program, carrying out the public awareness campaign, and developing a report
 - Average funding per year is \$10 million from the Highway Trust Fund

SEC. 13004. DATA INTEGRATION PILOT PROGRAM

- Establish a DOT pilot program to provide research and develop models that integrate, in near-real-time, data from multiple sources, including geolocated weather conditions, roadway conditions, incidents, work zones, and other nonrecurring events related to emergency planning; and information from emergency responders; and to facilitate data integration between the Department, the National Weather Service, and other sources of data that provide real-time data with respect to roadway conditions during or as a result of severe weather events
 - Funding average is \$2.5 million per year from General Fund

SEC. 13005. EMERGING TECHNOLOGY RESEARCH PILOT PROGRAM

Establishes a DOT pilot program to conduct emerging technology research

- Research and development activities relating to leveraging advanced and additive manufacturing technologies to increase the structural integrity and cost-effectiveness of surface transportation infrastructure; and research and development activities (including laboratory and test track supported accelerated pavement testing research regarding the impacts of connected, autonomous, and platooned vehicles on pavement and infrastructure performance) to reduce the impact of automated and connected driving systems and advanced driver assistance systems on pavement and infrastructure performance; and to improve transportation infrastructure design in anticipation of increased usage of automated driving systems and advanced driver-assistance systems
 - Funding is \$5 million per year from the General Fund

SEC. 13006. RESEARCH AND TECHNOLOGY DEVELOPMENT AND DEPLOYMENT

- Expands the objectives of the **Turner Fairbank Highway Research Center** to support research on non-market ready technologies in consultation with public and private entities. It establishes an open challenge and research proposal pilot program that provides grants for proposals to research needs or challenges identified or determined to be important by the Secretary
- It expands the **Technology and Innovation Deployment Program** by adding a focus on accelerated market readiness efforts, including new and innovative construction technologies for smarter, accelerated project delivery
 - o Funding average is \$110 million per year from the HTF.
 - The program is funded at \$67 million per year under the FAST Act
- The modified Advanced Transportation Technologies and Innovative Mobility Deployment Program, formerly Advanced Transportation and Congestion Management Technologies Deployment Program includes intermodal connectivity and a rural set aside of not less than 20 percent
 - The bill would expand the program's objectives to include improving the mobility of people and goods, improving the durability, and extending the life of transportation infrastructure, and preserving the environment, among other objectives
 - o The bill makes vehicle-to-pedestrian (V2P) technology eligible
 - o It includes language that would allow states and entities with stranded DSRC infrastructure assets from the FCC's decision on the 5.9 safety band to retrofit those assets to V2X technology.
 - Funding average per year is \$60 million (flat) from the Technology Innovation Deployment Program, Highway Research and Development Program and Intelligent Transportation Systems Program and the federal share is up to 80 percent
- This section also authorizes a new **Center of Excellence** to collect, conduct, and fund research on the impacts of new mobility, such as docked and dockless bicycles and electric scooters, and automated vehicles on land use, urban design, transportation, real estate, equity, and municipal budgets
- The **Highway Research & Deployment Program** would receive an average of \$147 million per year from the Highway Trust Fund
 - o The program is funded at \$125 million per year under the FAST Act

- The **Intelligent Transportation Systems Program** would receive an average of \$110 million per year from the Highway Trust Fund
 - o The program is funded at \$100 million per year under the FAST Act
- The **University Transportation Centers** would receive an average of \$100 million per year from the Highway Trust Fund
 - o The UTC program is funded at \$377.5 million over the five years of the FAST Act

SEC. 13009. TRANSPORTATION RESILIENCE AND ADAPTATION CENTERS OF EXCELLENCE

- Directs the Secretary to designate 10 regional Centers of Excellence for Resilience and Adaptation and 1 national Center of Excellence for Resilience and Adaptation, which will serve as a coordinator for the regional Centers, to receive grants to advance research and development that improves the resilience of regions of the United States to natural disasters, extreme weather, and the effects of climate change on surface transportation infrastructure and infrastructure dependent on surface transportation
- Activities include supporting climate vulnerability assessments informed by climate change science, including national climate assessments produced by the United States Global Change Research Program under section 106 of the Global Change Research Act of 1990 (15 U.S.C. 2936), relevant feasibility analyses of resilient transportation improvements, and transportation resilience planning, development of new design, operations, and maintenance standards for transportation infrastructure that can inform Federal and State decision making, research and development of new materials and technologies that could be integrated into existing and new transportation infrastructure, development, refinement, and piloting of new and emerging resilience
- Subject to the availability of appropriations, the Secretary shall provide to each Center of Excellence a grant of not less than \$5,000,000 for each of fiscal years 2022 through 2031 to carry out the activities

SEC. 21201. NATIONAL INFRASTRUCTURE PROJECT ASSISTANCE

- The bill establishes the National Infrastructure Project Assistance Program
- Provides single- or multi-year grants to projects generating national or regional economic, mobility, or safety benefits for large and small-scale projects
 - Eligible projects include:
 - Highway or bridge projects
 - o Freight intermodal or freight rail projects
 - o Railway-highway grade separation or elimination projects
 - Intercity passenger rail projects
 - Certain public transportation projects
 - In selecting project grants, the USDOT will take into consideration technologies that will allow for future connectivity and automation
 - Average funding per year is \$2 billion from the General Fund

SEC. 21202. LOCAL AND REGIONAL PROJECT ASSISTANCE

- The bill would codify, for the first time, a statutory basis for the highly popular RAISE Grant Program (formerly known as BUILD)
- Eligible projects include highway or bridge projects, passenger or freight rail projects, port infrastructure projects, and surface transportation components of airport projects, among other surface transportation projects
- In selecting project grants, the USDOT will take into consideration the extent to which the project adopts innovative technologies
- The section would limit the size of each grant to \$25 million and provide an equal split between rural and urban areas
 - Average funding per year is \$1.5 billion from the General Fund

SEC. 24102. HIGHWAY SAFETY PROGRAMS

- The bill creates new Highway Safety Program eligibilities to educate drivers to prevent misuse or misunderstanding of new vehicle technology
 - o Average funding per year is \$398.4 million **SEC. 24108. CRASH DATA**
- Require the Secretary to revise crash data systems to be able to distinguish bicycles, electric scooters, and other individual personal conveyance vehicles from other vehicles involved in a crash
- Establish a grant program to States to modernize data collection systems to enable them to more efficiently share data with the National Highway Traffic Safety Administration
 - o Average funding per year is \$150 million

SEC. 24110. REVIEW OF LAWS, SAFETY MEASURES, AND TECHNOLOGIES RELATING TO SCHOOL BUSES

• Direct the Secretary to research vehicle technologies and driver education methods that could further improve school bus safety

SEC. 24112. SAFE STREETS AND ROADS FOR ALL GRANT PROGRAM

- This section would establish a grant program for metropolitan planning organizations, local governments, and Tribal governments to develop and carry out comprehensive safety plans to prevent death and injury on roads and streets, commonly known as "Vision Zero" or "Toward Zero Deaths" initiatives
- Data-driven approach to identify projects or strategies to prevent fatalities and serious injuries in a locality, such as those involving new vehicle or other transportation-related technologies
 - Average funding per year is \$1 billion per year from the General Fund

SEC. 24208, CRASH AVOIDANCE TECHNOLOGY

- Require the DOT to promulgate a rule to establish minimum performance standards with respect to crash avoidance technology
- Require all new motor vehicles to be equipped with a forward collision warning and automatic emergency
 braking system that alerts the driver if the distance to a vehicle ahead or an object in the path of travel ahead
 is closing too quickly and a collision is imminent; and automatically applies the brakes if the driver fails to
 do so; as well as a lane departure warning and lane keeping assist system that warns the driver to maintain
 the lane of travel and corrects the course of travel if the driver fails to do so

SEC. 24209. REDUCTION OF DRIVER DISTRACTION

• The Reduction of Driver Distraction section requires the DOT to conduct research regarding the installation and use on motor vehicles of driver monitoring systems to minimize or eliminate driver distraction, driver disengagement, automation complacency by drivers, and foreseeable misuse of advanced driver-assist systems, and, if warranted based on the results of the study, require a rulemaking

SEC. 24214. HOOD AND BUMPER STANDARDS

• The Hood and Bumper Standards section requires the DOT to examine updating hood and bumper safety standards for motor vehicles considering, in particular, crash avoidance technologies and technologies to prevent injuries and fatalities suffered by pedestrians, bicyclists, or other vulnerable road users

SEC. 24219. RESEARCH ON CONNECTED VEHICLE TECHNOLOGY

- The Research on Connected Vehicle Technology section requires the DOT to conduct research to examine how connected vehicle systems can safely account for bicyclists and other vulnerable road users
- Details:
 - NHTSA, in collaboration with Intelligent Transportation Systems Joint Program Office and the FHWA, will—
 - Not later than 180 days after the date of enactment of this Act, expand to pedestrian research efforts to ensure that bicyclists and other vulnerable road users will be incorporated into the safe deployment of connected vehicle systems
 - Not later than 2 years after the date of enactment of this Act, submit to Congress and make publicly available a report describing the findings of the research efforts

SEC. 25001. INTELLIGENT TRANSPORTATION SYSTEMS PROGRAM ADVISORY COMMITTEE

• The bill reauthorizes and expands the membership of the Intelligent Transportation Systems Program Advisory Committee from 20 members to 25 members, broaden areas of expertise and experience, sets member terms at three years, and provides for virtual meetings

SEC. 25002. SMART COMMUNITY RESOURCE CENTER

- Establish a smart community resource center to increase public access to information on transportation programs
- Requires the DOT to create a website with resources on intelligent transportation system projects and smart
 community transportation projects—projects that use innovative technologies, data, and other means to
 address local challenges—including technical assistance, training, and examples of projects

SEC. 25005. STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION GRANT PROGRAM

- The bill establishes the Strengthening Mobility and Revolutionizing Transportation Grant Program to provide grants to projects that incorporate innovative transportation technologies or uses of data, including coordinated automation, connected vehicles, and intelligent sensor-based infrastructure
- The Secretary is directed to consider geographic diversity and select projects across rural, midsized, and large communities (no population cap)
- A SMART grant may be used to carry out a project that:
 - o Demonstrates the use of automated transportation and autonomous vehicles, while working to minimize the impact on the accessibility of any other user group or mode of travel
 - Vehicles that send and receive information regarding vehicle movements in the network and use vehicle-to-vehicle and vehicle-to-everything communications to provide advanced and reliable connectivity
 - The deployment and use of a collective intelligent infrastructure that allows sensors to collect and report real-time data to inform everyday transportation-related operations and performance
 - The integration of intelligent transportation systems with other existing systems and other advanced transportation technologies
 - o Innovative data and technological solutions supporting efficient goods movement, such as connected vehicle probe data, road weather data, or global positioning data to improve on-time pickup, and delivery, improved travel time reliability, reduced fuel consumption and emissions, and reduced labor and vehicle maintenance costs
 - The bill would authorize \$100 million annually from the General Fund for the program

SEC. 25006. ELECTRIC VEHICLE WORKING GROUP

- This section would establish a 25-member Electric Vehicle Working Group comprising a variety of Federal and non-Federal stakeholders to make recommendations on incorporating electric vehicles into the nation's transportation and energy systems
- The Secretaries of Transportation and Energy will lead the working group, and the working group is required to prepare a series of reports to Congress on barriers to electric vehicle adoption and possible opportunities and solutions

SEC. 25008. COORDINATION ON EMERGING TRANSPORTATION TECHNOLOGY

• This section would codify the Nontraditional and Emerging Transportation Technology Council, which aims to improve agency coordination to enable and regulate new and novel transportation technologies through adoption of best practices and identification of a lead modal administration for a given technology.

SEC. 25011. SAFETY DATA INITIATIVE

- The bill establishes the Safety Data Initiative through which the DOT can conduct demonstration projects, award grants, and use other strategies that develop new data visualization, sharing, and analytic tools that Federal, State, and local entities can use to enhance surface transportation safety. Activities include the sharing of data between and among Federal, State, and local transportation agencies, and leverage data from private sector entities
- The goals of the data sharing activities include:
 - The creation of data ecosystems to reduce barriers to the efficient integration and analysis of relevant datasets for use by safety professionals
 - The establishment of procedures adequate to ensure sufficient security, privacy, and confidentiality as needed to promote the sharing of sensitive or proprietary data

SEC. 25012. ADVANCED TRANSPORTATION RESEARCH

- Establish an Advanced Research Projects Agency-Infrastructure (ARPA-I) to fund research and development on advanced transportation infrastructure technologies
- ARPA-I would support novel, early-stage research as well as advance conceptual research into testing and development
- The goals are to advance the transportation infrastructure of the United States by:
 - o Developing innovative science and technology solutions that lower the long-term costs of infrastructure development, including costs of planning, construction, and maintenance
 - Reduce the lifecycle impacts of transportation infrastructure on the environment, including through the reduction of greenhouse gas emissions
 - Contribute significantly to improving the safe, secure, and efficient movement of goods and people;
 and promote the resilience of infrastructure from physical and cyber threats
- The section would provide for a Director to lead ARPA-I and require that the Director ensure that the activities of ARPA-I do not duplicate other USDOT research activities and programs
- This section would require an evaluation of how well ARPA-I is achieving its goals within three years

SEC. 25013. OPEN RESEARCH INITIATIVE

• The bill establishes the Open Research Initiative for universities, nonprofit organizations, and other entities to submit research proposals to the Secretary

• This section would require the Secretary to coordinate any research carried out under the pilot program with other DOT research activities to avoid duplication of efforts

SEC. 25014. TRANSPORTATION RESEARCH AND DEVELOPMENT 5-YEAR STRATEGIC PLAN

- Requires the Transportation Research and Development Strategic Plan to be updated every five years
 - This section also would amend the Strategic Plan to include reducing transportation cybersecurity risks

SEC. 25015. RESEARCH PLANNING MODIFICATIONS

- This section would require that annual research plans for the modal administrations describe the proposed research for the upcoming years and the potential impact of this proposed research
- This section would also require the DOT to publish a database with information on individual research projects, including the objectives of a research project and the amount of funds provided to a research project

SEC. 25016. INCORPORATION OF DEPARTMENT OF TRANSPORTATION RESEARCH

- Would require the Secretary to review the results of research conducted by the DOT every five years to identify opportunities to inform changes to laws, regulations, and policies that would improve the safety or efficiency of the transportation system
- In conducting a review, the Secretary of Transportation will identify any innovative practices, materials, or technologies that have demonstrable benefits to the transportation system and determine whether the practices, materials, or technologies require any statutory or regulatory modifications for adoption
- The section would require the Secretary to report to Congress on changes made because of research conducted by the DOT, as well as any additional changes to statute or regulation

SEC. 25017. UNIVERSITY TRANSPORTATION CENTERS PROGRAM

- The bill would make technical revisions related to the University Transportation Centers Program
 - Would require the Secretary to publish a description of the process used to select University Transportation Centers on the DOT's website
- The bill adds a cybersecurity focus to connected vehicles, connected infrastructure, and autonomous vehicles. New language:
 - "Focused research. -- The Secretary will make a grant to 1 of the 10 regional university transportation centers established under this paragraph for the purpose of furthering the objectives described in subsection (a)(2) in the field of comprehensive transportation safety, congestion, connected vehicles, connected infrastructure, and autonomous vehicles including the cybersecurity implications of technologies relating to connected vehicles, connected infrastructure, and autonomous vehicles"

SEC. 25020. TRANSPORTATION WORKFORCE DEVELOPMENT

- Would call for a National Academy of Sciences study on the workforce needs of intelligent transportation technologies and systems industry
- Using the results of this study, the section would require the Secretary to create a working group and a plan to address the recommendations and issues outlined in the National Academy of Sciences' study
- This section would also require the Secretary to conduct a public service announcement campaign to increase awareness of career opportunities in the transportation sector across diverse segments of the population

SEC. 25027. GAO STUDY ON IMPROVING THE EFFICIENCY OF TRAFFIC SYSTEMS

- Requires the Secretary to implement GAO recommendations related to cybersecurity risk management and cybersecurity workforce needs
- GAO would also be required to study the DOT's approach to managing cybersecurity for its systems and information, including the roles, responsibilities, and reporting relationships of senior officials with respect to cybersecurity

SEC. 27003. DEPARTMENT OF TRANSPORTATION SPECTRUM AUDIT

- Not later than 18 months after the date of enactment of this Act, the Assistant Secretary of Commerce for Communications and Information and the Secretary will jointly conduct an audit of the electromagnetic spectrum that is assigned or otherwise allocated to the Department as of the date of the audit
- The Assistant Secretary of Commerce for Communications and Information and the Secretary will include in the report submitted under subsection (a)(2), with respect to the electromagnetic spectrum that is assigned or otherwise allocated to the Department as of the date of the audit
 - o Each particular band of spectrum being used by the Department
 - A description of each purpose for which a particular band described in paragraph (1) is being used, and how much of the band is being used for that purpose
 - o The State or other geographic area in which a particular band described in paragraph (1) is assigned or allocated for use
 - Whether a particular band described in paragraph (1) is used exclusively by the Department or shared with another Federal entity or a non-Federal entity
 - o Any portion of the spectrum that is not being used by the Department

SEC. 40112. DEMONSTRATION OF ELECTRIC VEHICLE BATTERY SECOND-LIFE APPLICATIONS FOR GRID SERVICES

Section directs the Secretary of Energy to establish a demonstration project for second-life applications of
electric vehicle batteries as aggregated energy storage installation to provide services to the electric grid

SEC. 40207. BATTERY PROCESSING AND MANUFACTURING

- Establish within DOE an effort to ensure that the U.S. has a viable battery materials processing industry as well as create a battery manufacturing and recycling grant program.
- This section authorizes \$3,000,000,000 for FY22-26 for battery material processing grants, \$3,000,000,000 for FY22-26 for battery manufacturing and recycling grants and \$10,000,000 for FY22 for the recycling prize and \$125,000,000 for the battery recycling programs at DOE

SEC. 40208. ELECTRIC DRIVE VEHICLE BATTERY RECYCLING AND SECOND-LIFE APPLICATIONS PROGRAM

 The Secretary of Energy will carry out a program of research, development, and demonstration of secondlife applications for electric drive vehicle batteries that have been used to power electric drive vehicles, and technologies and processes for final recycling and disposal of the devices. Funding is \$200 million for FY22-26

SEC. 40541. GRANTS FOR ENERGY EFFICIENCY IMPROVEMENTS AND RENEWABLE ENERGY IMPROVEMENTS AT PUBLIC SCHOOL FACILITIES

- This section supports grants for the installation of alternative fueled vehicle infrastructure on school grounds for— (i) exclusive use of school buses, school fleets, or students; or (ii) the general public; and the purchase or lease of alternative fueled vehicles to be used by a school, including school buses, fleet vehicles, and other operational vehicles
- \$500 million for the period of FY22-26

SEC. 71101. CLEAN SCHOOL BUS PROGRAM

- State or local governments, eligible contractors, and nonprofit school transportation associations are authorized to receive grant funds
- Fifty percent of the funds are authorized for zero-emission school buses, and 50 percent of the funds are authorized for alternative fuels and zero-emission school buses
- Funds may be prioritized for rural or low-income communities and entities that have matching funds available
- Authorizes and appropriates \$1 billion per year for FY 2022-2026 (total \$5 billion)

TITLE I HIGHWAY TRUST FUND

Bill would extend the Highway Trust Fund's expenditure authority until October 2026, as well as the Sport Fish Restoration and Boating Trust Fund and the Leaking Underground Storage Tank Trust Fund (Sec. 80101)

It would extend highway-related taxes set to expire at the end of fiscal year 2022 through fiscal year 2028, while pushing 2023 expirations to 2029 (Sec. 80102) and would transfer \$90 billion to the Highway Account of the Highway Trust Fund and \$28 billion to the Mass Transit Account of the Highway Trust Fund (Sec. 80103)

