



## ITE FAST ACT REAUTHORIZATION PRINCIPLES Research & Innovation White Paper

Support continued  
funding for State  
Planning &  
Research Program

Transportation systems are vital to modern economies and lifestyles. They are also facing change “from all directions, including potentially revolutionary technologies such as drones and automated vehicles, rapid innovations in urban transportation services, unreliable funding for infrastructure and operations, and possible changes in national policies affecting trade, climate, environmental protection, and sources of energy” ([TRB Critical Issues 2019](#)). In order to address these changes, governments and transportation agencies will need to rely on research and innovation efforts to understand their effects. ITE has developed this policy brief to summarize current federal policy around transportation research and innovation and suggest certain principles that Congress and the USDOT should emphasize.

### **State Planning and Research Program**

The State Planning and Research program should be maintained in its current, formula-based configuration and the 25 percent set-aside for research, development, and technology transfer activities should continue. This will allow state DOTs to continue their commitments to research and implementation of innovative transportation technologies and processes across the country. For state DOTs and other transportation organizations and providers to continuously improve, research and innovation is key. States’ planning and research activities are funded through the State Planning and Research Program, which requires a two percent set-aside from each state’s core federal transportation budget ([MAP-21 - Fact Sheets - State Planning and Research \(SP&R\) | Federal Highway Administration](#)). State DOTs require well-managed research programs to make well-informed decisions that strengthen the transportation network. Any federal funding (re)authorization for transportation should provide the funding levels necessary to support these research programs.

Previous innovations fostered by FHWA have led to significant time and/or cost savings, and have also saved many lives. For example, FHWA has simulated and refined diverging diamond interchanges at its Turner-Fairbank Highway Research Center, then provided advice to states on implementation. These intersections have saved states tens of millions of dollars and reduced injury crashes by up to 80%. As another example, under FHWA’s Special Experimental Project Number 14, states have been able to complete design-build contracts instead of

## ITE Reauthorization Principles

Support continued funding for the Transit Cooperative Research Program.

Support continued funding for the ITS research programs.

Support establishment of a strategic research program to support a new federal initiative dedicated to significantly reducing the number of surface transportation fatalities and injuries

traditional design-bid-build contracts, cutting traditional delivery periods by a third. ([The Essential Federal Role in Highway Research and Innovation, 2015](#)).

### **Transit Cooperative Research Program**

The Transit Cooperative Research Program (TCRP), established in 1992, is sponsored by the Federal Transit Administration and managed by the Transportation Research Board. It serves as one of the principal means by which the public transportation industry can develop innovative near-term solutions to meet demands placed on it. Transit issues addressed through TCRP include facilities, vehicles, equipment, service concepts, operations, policy, planning, human resources, maintenance, and administrative practices. Its funding has been authorized in each of the surface transportation authorization bills since ISTEA, most recently in 2015 by the FAST Act. ([TCRP Annual Report, 2018](#)).

Given transit's importance as a key link in today's transportation systems and its positive benefits for social equity, climate change, congestion, and economic growth ([APTA 2019](#)), funding to support this research program focused on the transit industry is of great importance.

### **ITS research programs**

These programs should include connected vehicle technology, traffic management center operations, traffic incident management, traffic signal system management, public transit management, and advanced traveler information systems. Many of these programs are run through the Intelligent Transportation Systems Joint Program Office, which is housed within the Office of the Assistant Secretary for Research and Technology at the USDOT. The federal ITS research program focuses primarily on vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) connectivity through the application of advanced wireless technologies to enable transformative changes in the surface transportation system. According to the National Highway Traffic Safety Administration, V2V and V2I applications have the potential to address 80 percent of unimpaired crashes. These capabilities may also have significant potential for congestion and air quality improvements ([ITS JPO, 2019](#)).

### **Strategic Highway Research Program for Safety**

The Strategic Highway Research Program (SHRP) and SHRP2 were both years-long national efforts to consider strategic highway transportation research needs. The first SHRP was a \$150 million program over five years which focused on highway infrastructure needs: better materials, longer-life pavements, and cost-effective maintenance. The program allowed the United States to better construct and maintain its roadway infrastructure. SHRP2 focused on operational changes that would improve highway safety, reduce congestion, and improve methods for renewing

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roads and bridges ([Strategic Highway Research Program 2](#)). Both iterations resulted in hundreds of research projects, suggested improvements, and products for the transportation industry. One of the biggest success stories from the original SHRP is the Superpave asphalt binder specification. This asphalt specification increases the service life of asphalt overlays by approximately 25 percent, saving both transportation agencies and motorists billions of dollars over a few decades ([FHWA, 1997](#)).

ITE supports the establishment of another strategic highway research program that focuses on surface transportation safety issues. This new program should provide evidence-based research to enable the most effective deployment of all of the existing and new tools and approaches at our disposal, including Vision Zero, complete streets, driver behavior laws, operational measures, new data collection and analysis tools, and measures to protect the most vulnerable road users. Surface transportation deaths and injuries are a major public health problem, claiming 40,000 lives and resulting in 4.5 million serious injuries in the United States each year. The federal government should work with all transportation and land use stakeholders to develop and implement all possible tools and concepts to significantly reduce these numbers and make our transportation network safer for all people.

#### **Strategic Research Program on Transformational Technologies**

In addition to a program focused on safety, ITE also supports the establishment of a new strategic research program on transformational technologies in surface transportation. The objective of this new program should be to conduct the fact-based, accelerated research needed to inform policy in order to deploy these fast developing technologies in a manner and timeframe to meet long-term goals. These goals include increasing safety, reducing congestion, enhancing accessibility, increasing environmental and energy sustainability, and encouraging economic development and equity. Technologies to be included are connected and automated vehicles, electric vehicles, shared mobility, micromobility, and data management and analytics.

Automation may one day revolutionize the movement of people and goods. It will probably take longer to unfold than the general media implies, but advances in sensors, communication and information technologies, artificial intelligence, and entrepreneurial business models may be at such an important point of inflection as to almost guarantee significant future changes and, hopefully, benefits ([TRB Critical Issues 2019](#)). It is unclear at this point whether benefits - including improved mobility, faster deliveries, fewer crashes, reduced congestion, and better accessibility - will outweigh disbenefits of

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Support making the deployment of connected and automated vehicle infrastructure needs eligible for federal funding, beyond the historical practice of funding only capital expenses, to include operation and maintenance activities necessary to the proper and safe operation of CAVs.

increased congestion, more energy consumption and emissions, and a deeper accessibility divide. Research into the effects of these new technologies is needed to ensure that the positive outcomes are more likely than the negative.

### **Federal Funding for the Deployment, Operations, and Maintenance of Connected and Automated Vehicle Infrastructure Needs**

Operations and maintenance of CAV systems is different than traditional infrastructure and needs to be treated as such from a procurement, funding, oversight perspective. Estimates of the future costs of operating CAVs range from a few cents per mile to a dollar or more per mile, depending on fleet size, timeline, and types of vehicles. Traditional infrastructure is designed to last for decades, but newer communications and digital infrastructure will have much shorter useful lives. Maintaining the infrastructure that keeps vehicles connected to each other and to the roadways will be crucial for a CAV system to operate at all, much less safely. Federal funding to keep all infrastructure, both traditional and innovative, in peak operating condition will make a future transportation system possible.