



**U.S. House of Representatives Committee on Science, Space, and Technology
Subcommittee on Research and Technology**

“Accelerating Progress: U.S. Surface Transportation Research”

Testimony of

**The Honorable Gregory D. Winfree
Agency Director
Texas A&M Transportation Institute**

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Chairman Obernolte, Ranking Member Stevens, and Members of the Subcommittee, thank you for inviting me to testify before the Subcommittee regarding the U.S. Department of Transportation’s (USDOT) vital investments in surface transportation research. My name is Greg Winfree, and I am the Agency Director of the Texas A&M Transportation Institute (TTI), a member of The Texas A&M University System.

The Texas A&M University System is one of the largest systems of higher education in the nation, with an annual budget of \$8.1 billion. Through a statewide network of 12 universities and eight state agencies, the Texas A&M System serves approximately 175,000 students and reaches millions more through service, research, and outreach programs each year. With nearly \$1.6 billion in annual research expenditures, the A&M System fuels innovation, supports communities, and drives Texas’ economy forward.

About TTI

Established in 1950, TTI is a state agency and the largest and most comprehensive university-affiliated transportation research center in the United States. Throughout our 75-year history, TTI has addressed complex transportation challenges and opportunities and has conducted work in all 50 states and more than 54 countries.

TTI invented the “Traffic Stress Test” your constituents rely on every day. Our annual Urban Mobility Report quantifies how much time and money Americans lose sitting in traffic giving policymakers nationwide the ammunition to fight congestion with facts, not just frustration.

When it comes to road safety, we literally crash cars so you don’t have to. TTI’s “Proving Grounds” are one of the largest independent transportation crash testing facilities in the U.S., developing life-saving guardrails and barriers used nationwide to protect drivers and pedestrians.

TTI is pioneering smart transportation, turning highways into testbeds for autonomous vehicles you can trust. We don’t just research self-driving cars; we help set the national standards that shape how technology keeps our roads safe and efficient for every American.

Prior to joining TTI in 2016, I served as Assistant Secretary of the USDOT Office of the Assistant Secretary for Research and Technology (OST-R). In this role, I was responsible for a \$450 million budget and oversaw more than 1,000 scientific, data analysis, and administrative staff members who support USDOT's multi-modal transportation initiatives. The program offices under my purview included: the John A. Volpe National Transportation Systems Center; the Office of Research, Development and Technology (which administers the University Transportation Centers Program); the Bureau of Transportation Statistics; the Positioning, Navigation, Timing and Spectrum Management Office; the Intelligent Transportation Systems (ITS) Joint Program Office; and the Transportation Safety Institute.

The Importance of Federal Transportation Research Investments

Technology is changing at an incredible rate. Innovations that would once take decades are now happening daily. Much of this innovation is coming out of research institutions, like TTI, and continued investment in transportation research is vital to securing U.S. dominance in transportation and infrastructure. We cannot allow ourselves to fall behind our adversaries, which I fear may be happening at a quickening pace.

TTI values its longstanding, collaborative relationship with USDOT. Our partnership is a notable example of the force multiplier role research institutions can serve for USDOT and its state and local DOT partners. In addition to our robust partnership with USDOT, TTI has developed partnerships with state DOTs, particularly the Texas Department of Transportation. USDOT can foster relationships like these, including through the provision of federal funding, to enable technology transfer and implementation. In fact, the biggest return on federal research investment comes when programs are designed with deployment in mind from the start. The most persistent gaps are not in generating ideas, but in transitioning research into pilots, standards, and broad state adoption.

Research institutions are major participants in USDOT-sponsored research programs, including the cooperative research programs managed by the Transportation Research Board (TRB) of the National Academies of Sciences, Engineering, and Medicine. The National Cooperative Highway Research Program (NCHRP) is funded by the volunteer contributions from State DOTs from 5.5% of each state DOT's Federal-Aid Highway State Planning and Research (SPR) funds through the Federal Highway Administration (FHWA). The Transit Cooperative Research Program (TCRP) is funded by the Federal Transit Administration. The Airport Cooperative Research Program (ACRP) is funded by the Federal Aviation Administration (FAA). The results of NCHRP, TCRP, and ACRP projects, which are competitively awarded by TRB, have resulted in practical solutions implemented by state and local agencies to address critical transportation issues.

The research community also supports many other USDOT activities, including the ITS Joint Program Office, the SMART Grant Program, the Advanced Research Projects Agency – Infrastructure (ARPA-I), and specific FHWA and FTA Offices.

The University Transportation Centers Program

The University Transportation Centers (UTC) Program began in 1987 through the Surface Transportation and Uniform Relocation Assistance Act, which authorized a competition for 10 regional centers nationwide. Since then, the UTC Program has been reauthorized in every surface transportation reauthorization bill.

Over time, the program expanded to include multiple tiers and even designated (or “earmarked”) UTCs. However, since the passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) all UTCs in the program have been competitively awarded.

The current structure of the program, as authorized in the Infrastructure Investment and Jobs Act (IIJA) (P.L. 117-58), consists of 35 UTCs across three tiers: five National UTCs, 10 Regional UTCs, and 20 Tier 1 UTCs. More than 120 universities across the country participate in the 35 UTCs. Currently, a re-competition is underway for one Regional UTC and four Tier 1 UTCs.

The UTCs are where transportation innovation begins, resulting in better ways to plan, design, build, operate, and maintain transportation infrastructure, and train our nation’s future transportation workforce. The UTCs move ideas from research to reality, assisting USDOT in addressing transportation’s biggest challenges and delivering measurable impacts for communities, agencies, and industry. The UTCs have been at their most successful when centers have the freedom to take the priorities set forth by Congress and USDOT and identify the research areas that will drive innovation, in coordination with USDOT leadership and other centers. UTCs should be used as implementation partners and force multipliers, extending USDOT’s capacity to work directly with states on deployment.

TTI has been a leader in the UTC program since its inception having led one of the original 10 regional UTCs. Since then, TTI has participated in 11 UTCs, leading three. Currently, TTI leads the Center for Efficient Mobility Tier 1 UTC, and is partnered on four more: a national UTC, a regional UTC, and 2 Tier 1 UTCs.

Here are just a few examples of transportation innovations developed by TTI’s UTC collaborations:

- A track buckling prediction model to help rail operators prevent derailments and protect critical freight corridors.
- Concrete design and performance evaluation methods to help state DOTs build more durable bridges and reduce maintenance costs.
- Enhanced evacuation technologies.
- Wicking geotextile research to improve drainage and slope stability, helping transportation agencies avoid costly embankment failures.
- Integration of blockchain-based tracking frameworks into maritime logistics to improve supply chain efficiency and resiliency for port facilities and major industry.

The research community appreciates the support Congress has given to the UTC program since its inception. As Congress works on the next surface transportation bill, reauthorization of the UTC

program will ensure that USDOT continues to be able to harness the power and creativity of university research to address our nation's most pressing transportation challenges. Specifically, Congress should authorize the UTC program at not less than \$100 million per year and ensure that the number of national centers aligns with the number of statutory research priority areas set forth in 49 USC 6503(c)(1).

The Need for Transportation Intelligence

A resilient transportation system requires reliable, nationwide intelligence so USDOT and state agencies can plan and respond effectively. Data and performance baselines are essential for turning research into actionable, comparable decisions for states and operators. But, today our data are fragmented, with no unified view across state lines. Decision-makers see only pieces of the puzzle, missing context like pavement condition, safety, traffic volume, and commodity flows. TTI has led applied research efforts with the Federal Highway Administration and several states to break down these silos, especially for freight. Our solutions help agencies see the full picture and make better-informed decisions.

Despite these advances, resources available to USDOT and states remain limited. For example, many states do not have good information on congestion. Resources available at USDOT may only show a part of the system, like freight performance, and some are only available to the private sector.

Other nations, notably China, have invested in comprehensive platforms. The U.S. should not fall behind. That's why TTI is working in partnership with Senator Cornyn and the University of Maryland, to propose a National Infrastructure Intelligence Tool through the Congestion Mitigation Act.

This tool would unify existing data sources, align everything to an official highway network, and deliver a truly national, multimodal view of system performance. With this tool, USDOT and agencies could locate our worst bottlenecks and what is driving them, identify the corridors that keep vital industries and defense supplied, and determine the before-and-after impacts of disasters or infrastructure failures.

Other Critical Research Areas

Research institutions are best suited to support USDOT in quickly identifying and solving critical challenges. TTI has identified the following critical research areas that are deserving of federal attention and investment.

Emerging Technology – The transportation sector is rapidly transforming and is evolving from siloed individual modes - roads, rail, air, and ships - to digital infrastructure connecting modes and technology. Artificial intelligence, connected and automated vehicles, intelligent transportation systems, and other digital infrastructure all play a role. Research in the expansion of these technologies is critical to transportation modernization, congestion reduction, and improved safety outcomes. Research institutions are key partners in accelerating the deployment of innovative digital technologies, shared data, and coordinated operations to transform and

modernize major U.S. transportation corridors. Dedicated funding in the next surface reauthorization bill for technology deployment would serve to enhance these efforts. Earlier this month, OST-R released a request for information to seek input on the research necessary to support the application of digital infrastructure for the modernization of the nation's transportation system. According to OST-R, "responses will inform a coordinated national strategy for the development and deployment of Transportation Digital Infrastructure."¹ This is a welcome step.

Transportation Safety – The United States has yet to significantly reduce transportation-related fatalities in recent years, despite implementing several new technologies and approaches. Given the continuing alarming trends in fatalities and injuries, it is clear there is a need for a more universal, beneficial, and proactive approach to safety planning, deployment, and assessment at the state, regional, and national levels. TTI is focusing on work to reduce truck-related crashes. TTI is also working to address electric vehicle safety, where different physical characteristics of electric vehicles (higher weight, lower center of gravity) could impact the performance of traditional roadside hardware and safety devices.

Transportation Resilience – Extreme events, whether natural disasters or cybersecurity attacks and human incidents, pose great safety risks as they disrupt transportation operations and physical infrastructure. This is becoming an increasing concern with the proliferation of new technologies upon which transportation systems are highly reliant to function without disruption. The U.S. has experienced several disasters in recent years that have impacted transportation networks and research is necessary to improve coordination, data and visualization of the problem, and operational decisions that best move people and freight safely.

Advanced Infrastructure – As the transportation system rapidly changes, there is a need to adapt the infrastructure, materials, and construction practices used in new applications, such as in extraplanetary or deep ocean settings, or to address new vehicle technologies. This includes research on the physical infrastructure and use of innovative and advanced materials for transportation planning and operations to support U.S. leadership in commercial spaceflight and space exploration.

Energy – Transportation accounts for a significant portion of energy consumption nationally and globally. Innovation in this sector is essential to strengthen energy security and ensure the optimal functioning of the transportation system. The emergence of vehicle electrification and the proliferation of alternative fuels, such as hydrogen, expand the scope of transportation energy to include the electric grid and pipeline distribution networks, each with implications for transportation planning and revenue generation, environmental concerns, infrastructure impacts, and more.

Advanced Air Mobility - Demand for advanced aviation vehicles, such as uncrewed aerial systems, and advanced air mobility continues to accelerate rapidly. The Administration has emphasized the importance of modernizing the FAA to safely integrate these technologies into the national transportation system. Research focused on UAS and AAM operations, infrastructure integration, airspace management, and safety is critical to supporting the USDOT and FAA's mission and

¹ Request for Information: Research to Support Establishing a National Strategy for Transportation Digital Infrastructure, 91 Fed. Reg. 5150 (Feb. 4, 2026).

modernization efforts. This research provides the technical foundation necessary to support safe, scalable integration at the national level.