

Policy Update: Congress Advances Major Transportation R&D Legislation

Lewis-Burke Associates LLC – June 17, 2021

Legislation that sets funding, policy, and direction for transportation and infrastructure programs at the U.S. Department of Transportation (DOT) expires on September 30, 2021, the end of the fiscal year. Congressional activity to build on the current popular and bipartisan authorization, *Fixing America's Surface Transportation Act of 2015* (FAST Act), has increased due to the upcoming expiration and in light of President Biden's emphasis on infrastructure investments as a key component of his policy agenda. This involves discussion and consideration of proposals impacting DOT's portfolio of surface transportation research and development (R&D) activities, such as the University Transportation Centers (UTC) and the creation of new major competitive opportunities. It is anticipated a surface transportation reauthorization bill will pass before the September deadline.

This legislation is separate from a potential infrastructure package that Congress is still in the early stages of negotiating. That package would be aligned with the Biden Administration's American Jobs Plan and American Families Plan. The former would expand the definition of "infrastructure" well beyond the scope of surface transportation legislation making its way through Congress.

The following is an analysis of the current legislative landscape, including proposals from the individual bills that will ultimately comprise a final surface transportation reauthorization measure. It is intended to provide foresight and advanced intelligence needed to anticipate future opportunities, the context for initiating relationship-building within the transportation R&D community, and prompt conversations that raise awareness and buy-in from leadership at institutions and state and local government partner entities.

Highlights

The following priorities are highlighted across all current surface transportation bills:

- Support for advanced transportation technologies research
- Fighting climate change
- Promoting equity

Proposed Funding for DOT Surface Transportation R&D (In thousands of \$)



Surface Transportation Context and State of Play

As Congress continues to legislate a follow-on to the *FAST Act*, key factors illuminate the complexity and underscore the potential ramifications for changes to well-known programs and the possibilities for new opportunities. The unique nature of DOT's extramural R&D programs relative to other agencies is due to three major attributes:

- **Dependable** funding outside the annual appropriations process;
- **Predictable** funding due to the multi-year nature of the legislative vehicle; and
- **Impacts** on funding solicitation details (i.e. eligibility, areas of emphasis, number and size of awards, etc.) that closely mirror legislative provisions.

Most programs across the federal government depend on discretionary funds annually appropriated by Congress. However, many of DOT's surface transportation activities receive mandatory funding through the federal tax levied on gasoline sales and deposited into the U.S. Treasury's Highway Trust Fund. The mechanism of disbursing funds exists independent of the appropriations process. Most of the federal gas tax revenue is automatically re-distributed back to states for infrastructure development through apportionments set by law, the most recent being the *FAST Act*. However, a significant sum is also held by DOT for intramural and extramural transportation R&D. Because these funds are used for the construction of multi-year infrastructure projects, Congress strives to pass multi-year funding authorizations required for a project's planning and to guarantee resource availability. Researchers who tap into these programs benefit from sustained support and insulation from unpredictable yearly appropriations.

Multi-year funding can reduce Congress's ability to annually adjust or offer direction on a program's execution by DOT. This encourages significant legislative prescription and specificity and is reflected in the solicitations for competitive research opportunities at DOT. As such, new provisions or tweaks to longstanding programs can have significant repercussions for institutions. Legislative provisions in the *FAST Act* were responsible for both disruptive and favorable impacts to universities.

The pace of congressional action is increasing as the September 30, 2021 expiration of the *FAST Act* approaches. Multiple committees in the House and Senate have and will continue to consider surface transportation reauthorization bills.

Four committees in the Senate share jurisdiction over transportation policy: Environment and Public Works Committee (EPW); Commerce, Science, and Transportation Committee; Banking Committee; and the Finance Committee. The Senate Environment and Public Works Committee unanimously approved the *Surface Transportation Reauthorization Act of 2021* (STRA) in May. The Senate Commerce bill provided their additions to the legislation on issues that fall within the committee's jurisdiction, namely R&D, rail, and transportation safety. The Senate Banking and Finance committees will weigh in on the legislation, with the latter responsible for providing the mandatory funding details. Once those two committees add their sections to the bill it will move to a vote on the Senate floor.

Compared to the Senate, the process in the House is relatively straightforward. The Transportation and Infrastructure (T&I) Committee holds primary jurisdiction over transportation policy and approved the *INVEST in America Act* on June 9. Action now shifts to the Ways and Means Committee responsible for identifying the bill's funding sources ahead final passage in the House. Separately, the House Science, Space, and Technology Committee (HSST) unveiled a bill focused solely on DOT's R&D programs. HSST does not share formal jurisdiction over these matters, but some elements of the committee's past proposals have historically been adopted by T&I in the later stages of the T&I bill's consideration. This was the case with *FAST Act* in 2015.

Once the Senate and House bills are approved by the full chambers, Congress will have to agree on a conference bill and have President Biden sign it into law before the *FAST Act* expires on September 30. Additional details on each of the proposed bills are included in the following analysis.

Proposed Changes to the UTC Program in Surface Transportation Bills

The University Transportation Center (UTC) program is DOT’s largest competitive extramural research opportunity available to universities. The current make-up of the UTC program supports 35 university consortia across three categories with each corresponding to different funding levels and emphases. Additional details on the existing UTC competition can be found in Appendix A of this document.

Each of the four surface transportation bills would make changes to the program, some with major funding and topical implications. Given the popularity and competitiveness of UTCs – and their uniform inclusion in each legislative proposal – Lewis-Burke has provided a breakdown of the four proposals compared with the current makeup of the program below.

Bill	Originating Committee	Number of and Funding Levels for UTCs	Areas of Emphases	Other Changes
<i>Fixing America’s Surface Transportation Act of 2015</i>	Current Law	National (5): \$2-\$4 million Regional (10): \$1.5-\$3 million Tier I (20): \$1-\$2 million	Mobility, resilience, safety, state of good repair, environment, and congestion.	N/A
<i>INVEST in America Act</i>	House Transportation and Infrastructure	National (6): \$2.25-\$4.25 million Regional (10): \$1.75-\$3.25 million Tier I (20): \$1.25-\$2.25 million	“Improving the mobility of people and goods, reducing congestion, promoting safety, improving the durability and extending the life of transportation infrastructure and the existing transportation system, preserving the environment, and reducing greenhouse gas emissions.”	Would decrease match requirement from 100 to 50 percent for national and regional UTCs.
<i>Surface Transportation Research and Development Act of 2021</i>	House Science, Space, and Technology	National (10): \$3-\$6 million Regional (10): \$2.5-\$3.5 million Tier I (30): \$1.5-\$3 million	“Improving the mobility of people and goods, reducing congestion, promoting safety, improving the durability and extending the life of transportation infrastructure and the existing transportation system, and preserving the environment.”	Same match reduction as previous bill.
<i>Surface Transportation Reauthorization Act of 2021</i>	Senate Environment and Public Works	Maintains the current number of Centers and progressively increases, on an annual basis, the amount of funding provided for Centers in each category.	N/A	N/A
<i>Surface Transportation Investment Act of 2021</i>	Senate Commerce, Science, and Transportation	Does not alter Senate EPW’s proposed number of UTCs or the funding for each.	Would add cybersecurity implications of technologies relating to connected vehicles, connected infrastructure, and autonomous vehicles	Would require DOT to make publicly available a description of the process used to select UTCs.

House Transportation and Infrastructure Committee

On June 9, the House Transportation and Infrastructure (T&I) Committee approved, along mostly party lines, the *Investing in a New Vision for the Environment and Surface Transportation in America (INVEST in America) Act*. This bill is a \$547 billion, five-year surface transportation reauthorization bill. Major themes in the *INVEST in America Act* are fighting the effects of climate change, advancing equity, investing in the American workforce, and strengthening roads, bridges, and rail across the United States.

In addition to the changes to the UTC program highlighted previously, relevant proposals related to DOT's research and development portfolio include:

Transportation Research and Innovation:

- Mobility Through Advanced Technologies Program – Would rename the Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) program to the Mobility Through Advanced Technology (MTAT) program and increase funding from \$60 million to \$70 million per year. MTAT would prioritize projects that reduce emissions, decrease congestion, improve mobility, and increase safety, and would require at least three awards per year to be made to projects that reduce the number of crashes and increase pedestrian safety. Eligible uses of grant funds are expanded to include cybersecurity protections, vehicle-to-pedestrian safety systems, mobility-on-demand activities, and vulnerable road user safety systems. The federal share of the program is 80 percent. Additional details on the existing ATCMTD program can be found in Appendix A of this document.
- Unsolicited Research Initiative – Would establish a new research program to allow institutions of higher education to submit unsolicited research ideas to DOT. Proposals should be related to the DOT five-year research and development strategic plan and the federal share of the project would be 50 percent.
- National Highly Automated Vehicle and Mobility Innovation Clearinghouse – Would establish a national clearinghouse at an institution of higher education responsible for conducting research on the impacts of highly automated vehicles and mobility innovation, conducting community outreach, and making its research publicly available.
- Mobility Innovation Sandbox Program – Would give the Secretary of Education authority to make grants on mobility as a service and mobility on demand as a part of the existing public transportation innovation program.

Addressing Climate Change:

- Technology and Innovation Deployment Program – Would increase funding to \$152 million and adds the reduction of greenhouse gas emissions and the consideration of the impact on jobs from innovation in surface transportation to the objectives of the program.
- University Rail Climate Innovation Institute – Would establish a new grant program to create a University Rail Climate Innovation Institute at an institute of higher education for up to five years. The institute would be responsible for research and development of low or no emission rail technologies.
- Materials to Reduce Greenhouse Gas Emissions Program – Would establish a new grant program to support research at institutions of higher education on construction materials and practices that reduce greenhouse gases.

Advancing Equity and Investing in the American Workforce:

- Transportation Equity Research Program – Would reestablish the Transportation Equity Research Program to study the impact of surface transportation on low-income, minority, and other underserved communities that may be reliant on public transportation. Research on economic and community development for public transportation-dependent populations, and training programs for underserved populations were highlighted areas of interest.
- Implicit bias research – Would authorize \$20 million to establish a new grant program for institutions of higher education to conduct research, technology transfer, and training in partnership with police departments for implicit bias training as it relates to racial profiling and traffic stops.
- Surface Transportation Workforce Retraining Grant Program – Would authorize \$50 million per year to establish a new grant program focused on workforce retraining for surface transportation workers that have had or will have their jobs impacted by automation.

The *Surface Transportation Research and Development Act of 2021* (STRD), introduced by the House Science, Space, and Technology Committee (HSST) on May 28, would authorize and fund existing and new surface transportation programs at the U.S. Department of Transportation (DOT) for fiscal years (FY) 2022 through FY 2026. The bill includes provisions supporting innovation in the transportation sector.

The committee would significantly expand DOT's intramural and extramural R&D opportunities. Although the T&I Committee approved the *Invest in America Act of 2021* without acknowledging STRD's proposals, there may be an opportunity to integrate HSST's bill – either as a whole or its component provisions – as an amendment when the *Invest in America Act* is debated on the House floor. This scenario is in keeping with events that transpired as the *FAST Act* was under final consideration in the House in 2015. Whatever the outcome, STRD provides a window into the House Science Committee's priorities for transportation research and development.

Below are the key features of the *Surface Transportation Research and Development Act of 2021* of relevance to the research community:

Addressing Climate Change

- Resilient Transportation Infrastructure Centers Of Excellence – Would direct DOT to establish five centers of excellence to improve the resilience of transportation infrastructure to natural disasters, extreme weather, and climate change. Would authorize \$50 million for FY 2022 – FY 2026 to fund the centers. Centers are expected to be in geographically diverse areas that experience different national disasters and awardees would be responsible for a 50 percent cost match.

Multidisciplinary and Interagency Collaboration

- Advanced R&D – Would authorize \$25 million for and require the Secretary to establish the Advanced Transportation Research and Innovation Program to be administered by the Assistant Secretary of Research and Technology. The program would support research that addresses long term barriers to the development of multimodal transportation technologies, support high-risk R&D and would make federal investments in emerging technology development, and educates students in STEM fields.
- Basic Research Funding – Would authorize \$25 million for the Assistant Secretary of Research and Technology to administer a program that addresses long-term scientific barriers for development of multimodal advanced transportation technologies; accelerates development of transformational transportation innovations; leverages Federal interagency and academic research mechanisms; and trains students in transportation related STEM fields. The Secretary may support research grants, 75% of which would be required to go towards basic research.

Advanced and Emerging Technology Research

- Demonstration Activities – Would authorize \$30 million for the demonstration of multimodal emerging transportation technologies. Only transportation organizations serving populations of less than 250 million would be eligible. Each applicant would be expected to describe how they will collaborate with institutions of higher education, State and local governments, and other relevant entities.

Senate Environment and Public Works Committee

In May 2021, the Senate Environment and Public Works (EPW) committee released and unanimously approved the bipartisan *Surface Transportation Reauthorization Act of 2021* (STRA). STRA builds upon the committee's attempt to advance a surface transportation bill in the last Congress. STRA would authorize funding from FY 2022 through FY 2026 and represents an evolution of the *FAST Act* rather than a complete re-write.

STRA proposes changes to DOT's R&D portfolio. Relevant proposals in the bill include:

- New Center of Excellence – Would establish a Center of Excellence on New Mobility and Automated Vehicles. The center would conduct research on the impacts of automated vehicles and “new mobility” platforms (defined as ridesharing services, docked and dockless bicycles, and electric scooters) on land use, urban planning and design, transportation modes, real estate, and their financial impacts on municipal budgets.
- Open Challenge Research Initiative Pilot – Proposes a new \$15 million per year Open Challenge and Research Initiative Pilot. Existing UTCs and other eligible entities would offer research proposals that address “highway challenges” or other research needs.
- Expanded Technology Demonstration Program – Would broaden the ATCMTD program's scope to include the deployment, installation, and operations of technologies that improve safety, mobility, efficiency, performance, intermodal connectivity, and infrastructure return on investment.

Addressing Climate Change:

- Transportation Resilience and Adaption Centers of Excellence – Would establish ten regional Centers of Excellence for Resilience and Adaption. The Centers of Excellence would advance research and development that improves the resilience of surface transportation infrastructure to national disasters and extreme weather.
- Next-Generation Vehicle Infrastructure – Would provides grants of up to \$15 million to strategically deploy infrastructure that accommodates electric, hydrogen, propane, or natural gas-powered vehicles.
- Other Environmental Initiatives – New funding and incentives would be used to reduce carbon emissions, reduce congestion in urban areas, provide state and local governments resources to increase transportation infrastructure resiliency, and mitigate urban heat islands and poor air quality.

The *Surface Transportation Investment Act of 2021* (STIA), approved by the Senate Commerce, Science, and Transportation Committee on June 16, would authorize \$78 billion over 5 years for multimodal surface transportation, rail, freight, and safety programs. The bill will be additive to EPW's *Surface Transportation Reauthorization Act of 2021* bill discussed earlier.

STIA would authorize over \$1 billion for new and existing research and development programs from FY 2022 through FY 2026. However, unlike other mandatory-funded programs at DOT, the research and development proposals authorized in STIA would require Congress to fund these activities through the annual appropriations cycle.

Language relevant to the transportation research community and institutions of higher education include:

- Advanced Research Projects Agency – Infrastructure (ARPA-I) – Would establish ARPA-I within DOT to support the development of innovative science and technology solutions that lower long-term costs of transportation infrastructure, reduce lifecycle impacts on the environment, improve transportation safety, and promote infrastructure resilience. The Agency would fund novel, early-stage research as well as advance conceptual research into testing and development. The creation of ARPA-I was included in the President's FY 2022 Budget Request for DOT.
- Advanced Transportation Research Initiative – Would establish a pilot program for universities, nonprofit organizations, and other entities to submit unsolicited research proposals. This section would require DOT to coordinate any research carried out under the pilot program with other DOT research activities to avoid duplication of efforts. The initiative could receive up to \$50 million from unobligated funding designated for to the UTC program.
- Advanced Technologies Program – Would rename the ATCMTD program as the Advanced Transportation Technology Deployment Program. 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. This section maintains funding for the program at \$60 million annually.

Appendix A: DOT's Major Existing R&D Programs

DOT is home to several extramural R&D programs, most of which are managed through the Federal Highway Administration (FHWA). While significant and well-known programs are targeted to universities, others require engaging non-traditional partners at state DOTs, local government entities, and Metropolitan Planning Organizations.

University Transportation Centers

The University Transportation Center (UTC) program is DOT's largest competitive extramural research opportunity available to universities. The *FAST Act* authorized funding for 35 university consortia across three categories with each corresponding to different funding levels and emphases:

- National Centers: Five National UTCs receive between \$2-\$4 million annually and are required to identify a one-to-one match of federal funds;
- Regional Centers: 10 UTCs located in each of the Standard Federal Regions. Each regional UTC receives between \$1.5 million and \$3 million annually and is required to identify a one-to-one match of federal funds; and
- Tier 1 Centers: 20 Tier 1 UTCs. Each UTC is awarded between \$1 million and \$2 million annually and is required to match 50 percent of federal funds. Consideration was given to consortia that include minority-serving institutions with demonstrated transportation-related research capabilities.

A re-competition for all 35 UTCs is triggered by passage of a surface transportation bill. Programmatic details and direction are also directly tied to and influenced by provisions within the legislation. By extension – and to the benefit of successful applicants – the length of awards is dictated by the duration of the authorizing legislation. Conversely, faculty who lose a UTC or are unsuccessful in winning a center can wait years for a new competition. This framework ensures a high-stakes competition and oversubscription of the program. Once a multi-year surface transportation authorization is signed into law, a new UTC competition is expected in three to six months thereafter. UTCs have historically been awarded based on a proposer's ability to advance transportation expertise and technological capability through research, education, and technology transfer, while also addressing future workforce needs.

The program has been criticized for a lack of transparency, award selections suggestive of political interference, a lack of adherence to DOT's strategic priorities, and ignoring congressional direction. To address concerns, Congress established two additional National UTCs in the FY 2018 omnibus appropriations bill. These centers differ from the 35 *FAST Act*-authorized centers through their creation in appropriations legislation and reliance on discretionary funding. In its FY 2020 spending bill, Congress established four new Tier 1 UTCs in addition to the 35 *FAST Act* centers and the FY 2018 omnibus National centers.

Advanced Transportation Congestion Management Technology Deployment Program

Established by the *FAST Act*, the Advanced Transportation Congestion Management Technology Deployment program (ATCMTD) provides \$60 million in annual mandatory funded grants to reduce traffic congestion. The Department releases solicitations in April or May of each year, and typically makes five to ten awards. While universities are eligible to lead proposals, their success rate has been low. Of the 49 ATCMTD awards made over the program's five-year existence, two have been led by a university. Universities have received funding indirectly by joining a state DOT, local government, or MPO-led proposal.



Appendix B: Sources and Additional Information

House Transportation and Infrastructure Committee

- The full text for the *Investing in a New Vision for the Environment and Surface Transportation in America (INVEST in America) Act* is available at <https://transportation.house.gov/download/ans-to-hr-3684-invest-in-america-act>
- A section-by-section of the legislation is available at <https://transportation.house.gov/download/the-invest-in-america-act-section-by-section>.

House Science, Space, and Technology Committee

- The full text for the *Surface Transportation Research and Development Act of 2021* is available at <https://science.house.gov/download/the-surface-transportation-research-and-development-act>
- A section-by-section of the legislation is available at <https://science.house.gov/download/surface-transportation-section-by-section>.

Senate Environment and Public Works Committee

- The full text for the *Surface Transportation Reauthorization Act of 2021 (STRA)* is available at https://www.epw.senate.gov/public/_cache/files/c/8/c8655fed-8f7c-457b-a010-3e028bc49b63/6636AFC54CEFBECD631118AED3415CB1.stra-final-bill-text-5-21.pdf
- A section-by-section of the legislation is available at https://www.epw.senate.gov/public/_cache/files/a/5/a53f0dff-9ebc-4ab2-a74c-f11698c6a93d/C4B5572EE70DE0D4689DD1B00EFF24C9.section-by-section-clean-final.pdf.

Senate Commerce, Science, and Transportation Committee

- The full text for the *Surface Transportation Investment Act of 2021* is available at <https://www.commerce.senate.gov/services/files/ACEB4B07-B232-4176-BDE8-8CC5C9531639>
- A section-by-section is available at <https://www.commerce.senate.gov/services/files/7A88B060-F769-4772-969E-29E9B2ABA903>.

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