

# UNIVERSITY TRANSPORTATION CENTERS (UTC) PROGRAM

## ***FY2020 NOTICE OF FUNDING OPPORTUNITY TO ESTABLISH NEW TIER 1 UTCs***

Opening Date: April 2, 2020  
Letter of Intent Requested: May 4, 2020  
Required Application Due: June 1, 2020

**Grants.gov Opportunity No. UTCTIER1COMP2020**

**Catalog of Notice Domestic Assistance Number 20.701**

**Office of the Assistant Secretary for Research and Technology  
U.S. Department of Transportation  
Washington, D.C. 20590-0001**

<https://www.transportation.gov/content/university-transportation-centers>

## SECTION A. PROGRAM DESCRIPTION

### A.1 Introduction

The Fixing America's Surface Transportation Act (FAST Act, P. L. 114-94, December 4, 2015) authorizes the Secretary of Transportation to make grants to eligible non-profit institutions of higher education to establish and operate University Transportation Centers (UTCs or Centers). Under the FAST Act, the UTC Program consists of National, Regional, and Tier 1 Centers, and those UTCs were selected through competitions held in 2016, 2018, and 2019. The Office of the Assistant Secretary for Research and Technology (OST-R) of the U.S. Department of Transportation (DOT or the Department) manages the UTC Program.

Authorization and funding for additional Tier 1 Centers is provided under the Further Consolidated Appropriations Act, 2020 (P. L. 116-94, December 20, 2019). Through this Notice of Funding Opportunity (NOFO), the Department seeks competitive grant applications for four new Tier 1 UTCs, intending to fund one UTC in each of the following specific topic areas.

1. Highly Automated Transportation Systems Research;
2. Communications Technology and E-Commerce Effects on Travel Demand;
3. Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities; or
4. Strategic Implications of Changing Public Transportation Travel Trends.

A detailed Research Statement Abstract for each topic area is provided in **Appendix A: Topic Areas**.

Subject to availability of funds and to the merits of applications received, the four new Tier 1 UTCs will be selected by the Secretary, in consultation with the Assistant Secretary for Research and Technology, the Administrator of the Federal Highway Administration, and other DOT modal administrators as appropriate (49 U.S.C. § 5505(b)(4)(B) as amended by P. L. 114-94, Sec. 6016). These Tier 1 UTCs will support research needs that DOT has identified under two of the FAST Act research priorities (49 U.S.C. § 6503(c)(1)): "Promoting Safety" and "Improving Mobility of People and Goods."

A UTC must be located in the United States or its territories. It must be a consortium of two or more universities led by a single university that will be the grant Recipient. As discussed below in **Section C.1 Eligible Applicants**, the lead/grant Recipient institutions of the twenty current FAST Act Tier 1 UTCs are not eligible to be the lead on one of the four new Tier 1 UTCs.

Each Tier 1 Center is required to obtain matching funds from non-Federal sources in an amount equal to at least 50 percent of the DOT grant amount (see **Section C.3 Cost Sharing or Matching Funds** for specific match amounts). The DOT grant funds have a duration as noted in **Appendix A: Topic Areas**, and Centers have until the end of the grant to meet the full match requirement.

Specific instructions on how to apply for UTC grant funding under this NOFO are provided in **Section D. Application and Submission Information**.

## A.2 UTC Mission

The statutory purpose of a UTC is to:

- advance transportation expertise and technology in the many disciplines that comprise transportation through research, education and workforce development, and technology transfer;
- provide a critical transportation knowledge base outside the Department; and
- address vital workforce needs and educate the next generation of transportation leaders.

Although every Center has the same broad mission, DOT values diversity in program participation and in the approaches that individual Centers take to achieve the program purpose.

## A.3 UTC Program History

Congress first authorized the UTC Program in 1987. UTCs have traditionally operated as multi-year grants with individual Centers addressing relatively broad subject areas. Because the Further Consolidated Appropriations Act, 2020, authorizes 1-year of funding in what is currently slated to be the final year of the FAST Act's overall authorization of the UTC Program, DOT will fund the four new Tier 1 UTCs with each receiving a single increment of funding and focused on narrower topics than has been the case in the past.

Additional information about the UTC Program is available on the UTC Program website (<https://www.transportation.gov/content/university-transportation-centers>).

## SECTION B. FEDERAL AWARD INFORMATION

DOT will operate the UTC Program based on the principles of full and open competition. Awards will be in the form of grants to successful applicants. The funding and authorization available to OST-R for this NOFO are solely from Federal Fiscal Year (FY) 2020 funds, which is expected to amount to \$5 million. There is an administrative takedown of no more than 1 and a half percent for program evaluation and oversight, so the total available for award under this NOFO is expected to be \$4,925,000. As of the opening date of this NOFO, DOT expects awarded funds to be available to the four selected Tier 1 UTCs from an anticipated start date of October 1, 2020, through a time period specified in **Appendix A: Topic Areas**.

Each of the four Topic Areas is described in detail in **Appendix A: Topic Areas**, with guidance on how to address each Topic Area within the evaluation criteria for this NOFO in **Appendix A: Topic Areas** and in **Section D. Application and Submission Information**.

## SECTION C. ELIGIBILITY INFORMATION

### C.1 Eligible Applicants

Only U.S. non-profit institutions of higher education<sup>1</sup> as defined under 20 U.S.C. § 1001(a) are eligible to apply or to be members of a proposed UTC consortium. Non-profit institutions of

<sup>1</sup> The *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Grants*, Title 2 of the Code of Federal Regulations, Part 200, defines "institution of higher education" as that term is established in 20 U.S.C. § 1001(a).

higher education may include qualifying 2-year institutions<sup>2</sup> that meet the requirements of 20 U.S.C. § 1001(a). Applications submitted by or including as a consortium member an entity other than a U.S. non-profit institution of higher education will not be eligible for selection.

DOT encourages U.S. non-profit institutions of higher education that are not currently affiliated with the UTC Program to apply. With the exception of current Tier 1 UTC lead institutions, all other FAST Act consortium members are eligible.

The FAST Act restricts the lead institution of a UTC from receiving more than one type (National, Regional, and Tier 1) of UTC grant per FY (49 U.S.C. § 5505(b)(2)(A)). Because each of the **twenty current lead institutions of Tier 1 UTC multi-year grants** authorized under the FAST Act (listed here <https://www.transportation.gov/utc/fast-act-utc-grantees>) will receive a continuation award for that grant from Federal FY 2020 funds, those twenty institutions **may not apply as the lead institution for a grant under this NOFO**; they may, however, be non-lead consortium members on the new Tier 1 UTCs. Current recipients of FAST Act National or Regional UTC grants and non-lead consortium members of any type of current FAST Act UTC grants are eligible to receive as the lead institution one of the four new Tier 1 UTC grants.

Eligibility of Existing FAST-Act-UTC Universities		
	Institution Is Eligible To Receive New Tier 1 UTC As <u>Lead Institution</u>	Institution Is Eligible To Be <u>Non-Lead Consortium Member</u> On Another Institution's New Tier 1 UTC
Institution is Lead on Existing FAST Act National UTC	Yes	Yes
Institution is Lead on Existing FAST Act Regional UTC	Yes	Yes
Institution is Lead on Existing FAST Act Tier 1 UTC	No	Yes
Institution is Non-Lead Consortium Member on Existing FAST Act National UTC	Yes	Yes
Institution is Non-Lead Consortium Member on Existing FAST Act Regional UTC	Yes	Yes
Institution is Non-Lead Consortium Member on Existing FAST Act Tier 1 UTC	Yes	Yes

If a current UTC Program grant recipient is selected to be a new Tier 1 UTC under this NOFO, the new grant will be managed as a separate entity from any previously awarded grant(s).

## C.2 Consortia

Under the FAST Act, a UTC must be a consortium of two or more non-profit institutions of higher education led by one lead grant Recipient institution, all located in the United States or its territories. Because each of the new Tier 1 UTCs will receive just one increment of funding for a grant lasting 2 years or less, DOT strongly encourages applicants to limit the size of the consortium to only those institutions that will contribute to significant outcomes under the topic area that application will address. A consortium should be a meaningful arrangement with all members participating in an impactful way.

<sup>2</sup> Qualifying 2-year institutions may include junior or community colleges if they meet the requirements of 20 U.S.C. § 1001(a).

Universities may collaborate with State DOTs, the private sector, and non-profit organizations on particular activities or to provide services that assist in accomplishing the UTC's activities. Organizations that are not defined as U.S. non-profit institutions of higher education, however, will not be considered members of the consortium.

### C.3 Cost Sharing or Matching Funds

Total funding for a Center's operation must include the DOT funding awarded plus non-Federal matching funds in an amount equal to at least 50 percent of the DOT grant amount. Non-Federal matching funds (1) may be cash or in-kind, (2) must be used to accomplish program objectives and the purpose of the grant, and (3) must be fully documented in the Center's records. Grant Recipients will have the length of the grant period to provide the full amount of required matching funds.

The anticipated award amount, and associated required matching-fund amount, for each of the four grants to be funded through this NOFO is:

Topic Area	Federal Award Amount	Required Matching-Fund Amount
1. Highly Automated Transportation Systems Research	\$1,925,000	\$962,500
2. Communications Technology and E-Commerce Effects on Travel Demand	\$1,000,000	\$500,000
3. Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities	\$1,000,000	\$500,000
4. Strategic Implications of Changing Public Transportation Travel Trends	\$1,000,000	\$500,000

Under the FAST Act, matching funds for UTC grants may include Federal funds provided to a recipient under 23 U.S.C. § 504(b) or 505 (local technical assistance and State planning and research programs managed by the Federal Highway Administration). No other sources of Federal funds may be counted toward the match requirement.

Letters of commitment from organizations that will provide matching funds are neither required nor permitted in the application for space reasons. Instead, applicants should note in the application if you have received such commitments, keeping any letters of commitment on file for audit purposes.

### C.4 Multiple Applications

Eligible applicants may submit more than one application under this NOFO, but as noted above in Section C.1 Eligible Applicants, no institution may receive more than one Tier 1 UTC grant per FY. If an institution submits more than one application, and if reviewers rate more than one of its applications as highly recommended, DOT shall determine based on the overall portfolio of highly-recommended applications which, if any, of the institution's applications shall be selected for funding.

## SECTION D. APPLICATION AND SUBMISSION INFORMATION

### D.1 Address to Request Application Package

Applicants may view this NOFO and other supporting materials on Grants.gov (the Federal electronic grant identification and application system) and the UTC Program website (<https://www.transportation.gov/utc/current-competition>). Applicants that are unable to access the Internet or need special accommodation may contact the UTC Program office at (202) 366-4957 to request that a hard copy of the NOFO be sent by mail. Please note that grant Recipients selected through this NOFO will be required to use Internet tools for public sharing of information about their respective UTCs.

For Grants.gov, applicants should log onto <https://www.grants.gov/> and search for Catalog of Federal Domestic Assistance number 20.701 or **Opportunity No. UTCTIER1COMP2020** to find this funding opportunity.

### D.2 Content and Form of Application Submission

#### D.2.1 Letter of Intent

This NOFO requests that each application be preceded by submission of a Letter of Intent to be received by 5:00PM EDT, MONDAY, MAY 4, 2020. The Letter of Intent should be submitted to OST-R as a PDF attachment in an e-mail, sent to [UTCgrants@dot.gov](mailto:UTCgrants@dot.gov). An applicant will not be penalized if a letter of intent is not submitted.

The Letter of Intent should identify:

- the institution of higher education that will submit the application as the lead of the consortium,
- which of the four Topic Areas the application will address, and
- contact information for someone at the institution whom DOT may contact with questions about the letter of intent.

Letters of Intent help DOT establish review panels comprised of relevant subject matter experts in advance of receipt of final proposals.

#### D.2.2 Applications

If your non-profit institution of higher education is eligible to receive an award under this NOFO, your authorized representative must submit the application through <https://www.grants.gov/> (please also see **Section D.6 Other Submission Requirements** for information about required hard-copy submission). You will want to ensure well in advance that your institution is registered with Grants.gov, as registration is not instantaneous.

You are responsible for the accuracy and validity of all the administrative, fiscal, and technical information in your application. The application must consist of:

1. A cover sheet;
2. A one-page executive summary;
3. A written response to the evaluation criteria (this portion of the proposal must not exceed 30 pages);
4. A required appendix of curriculum vitae;
5. Standard Form SF-424 "Application for Federal Assistance";
6. A proposed budget using Standard Form SF-424A "Budget Information – Non-Construction Programs";
7. Standard Form SF-424B "Assurances – Non-Construction Programs"; and
8. A copy of each of your consortium institutions' most recent negotiated overhead and fringe benefit rates.

**▶▶▶ PLEASE ENSURE THAT YOUR APPLICATION DOES NOT CONTAIN ANY  
PERSONALLY IDENTIFIABLE INFORMATION ◀◀◀**  
(such as Social Security numbers, birth dates, home addresses, etc.)

Information submitted as part of the application may be subject to the Freedom of Information Act (FOIA).

#### **D.2.2.1 Cover Sheet**

The cover sheet of the proposal must include the following information:

1. the name of the proposed UTC,
2. which of the four Topic Areas the application addresses, and
3. names and locations (city, State, and zip code) of the proposed lead/grant Recipient institution and all other members of the Center's consortium.
  - a. In order for OST-R to comply with Federal agency reporting requirements, state whether any of the consortium members is a Minority Institution using the FAST Act's definition of Minority Institution per Section 365 of the Higher Education Act of 1965 (20 U.S.C. § 1067k) as an institution of higher education whose enrollment of a single minority or a combination of minorities exceeds 50 percent of the total enrollment.

Prepare the cover sheet as an 8.5X11" standard-size page using Arial 12 font with one-inch margins. Color may be used if desired. The cover sheet does not count toward the 30-page limit that applies to the Written Response section that follows.

#### **D.2.2.2 Executive Summary**

Prepare an executive summary of not more than one page in length. It should contain high-level descriptions of the research you propose to conduct and the impacts you envision that research will have on the transportation system and its users. The Executive Summary does not count toward the 30-page limit that applies to the Written Response section that follows.

#### **D.2.2.3 Written Response**

This section must respond to the Research Statement Abstract for your chosen Topic Area in **Appendix A: Topic Areas** and to all of the Evaluation Criteria stated below in this section.

**Page Limits and Formatting:**

This section of your proposal must not exceed a total length of thirty (30) 8.5X11" standard-size pages, single-spaced, Arial 12 font\*, with one-inch margins. Any application that exceeds the page limit or that uses other than the specified spacing, font, or margins will be rejected.

Color may be used if desired.

A table of contents is not required; if you choose to include one, it will count toward the 30-page limit.

The cover sheet, executive summary, and appendix of curriculum vitae do not count toward the 30-page limit.

There are specific page limits for the required appendix, which are stated in **Section D.2.2.4. Required Appendix of Curriculum Vitae** below.

\*Arial 12 should be used throughout the document, except for headers/footers and tables/figures within which the font size may be no smaller than 9. Arial Black is acceptable, but Arial Narrow is not. Any size/type of font may be used in the appendices.

**NOTE:** Do not rely on hyperlinks to external websites that provide supplemental content to the information contained in the proposal, as reviewers will be instructed not to view them.

**D.2.2.3.1 Response to Evaluation Criteria**

The application submitted in response to this NOFO will serve as the Strategic Research Plan for any Center that is selected to receive funding. All the items listed below must be addressed clearly and completely. Resources that are expected to be provided through the grant's required matching funds should be included in the response.

**All applicants must respond to the following evaluation criteria, in the order specified below.**

**PLEASE REFER TO APPENDIX A: TOPIC AREAS FOR DETAILED  
INFORMATION ABOUT THE TOPIC AREA ADDRESSED IN YOUR  
APPLICATION**

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Your Written Response should closely reflect what **Appendix A: TOPIC AREAS** says about your chosen Topic Area. DOT will select each new Tier 1 UTC based on how well an application supports the research statement abstract for that Topic Area in **Appendix A: TOPIC AREAS**.

**D.2.2.3.1.A Criterion One: Research Activities, Capability, and Resources**

In this section, describe the key research activities in support of your chosen Topic Area that you will undertake and demonstrate your capability and experience to carry out these activities and achieve the objectives of the UTC Program. You must provide sufficient detail in this section to enable the reviewers to understand the scope of the project financed with your grant, and to evaluate the feasibility of your proposed approach as well as your capability to achieve the proposed outcomes within the grant's anticipated period of performance.



Because of the relatively short duration of these grants, reviewers will be instructed to rate more highly applicants who are able to demonstrate that they are prepared to begin meaningful research in support of the chosen Topic Area quickly after the grant is awarded.

i. Proposed Research Activities

- Describe your Center's proposed research activities to respond to the Research Statement Abstract for the Topic Area you selected.
- Describe your commitment to, and implementation of, peer review principles and other research "best practices" in the selection and management of your research.
- Note the composition of any existing or planned stakeholder engagement and/or other entity expected to provide technical input as research is being conducted.
- Discuss the degree to which your proposed research activities are multimodal (either across transportation modes or involving modes other than highway) and multidisciplinary in scope, and how such an emphasis impacts the quality of the research.
- Consistent with DOT's ROUTES initiative (<https://www.transportation.gov/rural>), describe how rural transportation challenges might benefit from your research and/or how you might specifically include rural considerations within the Research Statement Abstract for the Topic Area you selected.
- Provide two to three relevant performance metrics that you will use to assess your performance in meeting research goals; state how you will obtain and maintain the information included in those metrics.

ii. Capability and Resources

- Describe your ability to address your chosen Topic Area in your proposed research activities. Please include:
  - Examples of significant impacts of related past research on the transportation enterprise, including a description of products or patents, or a change in practice, or instances of informing policy decisions.
  - Examples of research included in peer-reviewed journals, publications, and conferences that exemplifies your experience in the topical subject matter and or with the research methods, data sources, stakeholders, etc. that are relevant to the chosen topic.
  - Qualifications of faculty expected to be involved in your proposed research activities.
- Describe the research resources already available to conduct your proposed research activities, including those at consortium universities. Among others, these resources may include the following, if relevant to the transportation research to be conducted:
  - Dedicated laboratory space;
  - Specialized computer or other technical equipment; and
  - University support personnel with particular knowledge of transportation-research needs such as a librarian, IT/data specialist, or machinist.
- Describe any research resources you anticipate obtaining in order to perform your proposed research activities.

**D.2.2.3.1.B Criterion Two: Leadership**

In this section, describe your leadership capacity to address the transportation problem and advance transportation expertise and technology within your chosen Topic Area. You should provide examples of:

- Your high standing within the national arena of transportation research as evidenced by activities such as publications, committee work, participation in professional transportation organizations and conferences (e.g., presentations, steering committees, session chairs, etc.), awards, and other indicators of leadership excellence.
- Your experience in contributing to the solution of local, regional, and/or national transportation problems.
- Demonstrated leadership in the development and delivery of programs. This includes innovative transportation education, workforce development, technology transfer, and research activities.
- Two to three relevant performance metrics that you will use to measure your Team's leadership and how you will obtain the information to track those outcomes.

#### **D.2.2.3.1.C Criterion Three: Education and Workforce Development**

Education and workforce development efforts should result in the development of a transportation workforce that is prepared to design, deploy, operate, and maintain the complex transportation systems of the future. Describe how your engagement in this research initiative will be leveraged to support your education and workforce development activities.

- Describe how this research initiative can produce information that is supportive of your accredited degree-granting and/or non-degree programs.
- Describe how the grant will be used to support students participating in research done under the grant.

#### **D.2.2.3.1.D Criterion Four: Technology Transfer and Collaboration**

DOT emphasizes that UTCs must conduct technology transfer to make research results available to potential users in a form that can be implemented, utilized, commercialized, or otherwise applied. Under this grant, with the Tier 1 UTC having a more refined focus on a specific Topic Area than has been the case for past Tier 1 UTCs, identifying and working with potential users is especially important. In this section, you must describe the technology transfer activities you will undertake to ensure the successful transfer of information and technology to those who can use it, especially current transportation practitioners. You must also provide examples of your prior experience in outreach, dissemination, and technology transfer activities related to transportation research and education.

Describe your planned activities and prior experience in technology transfer and collaboration activities, such as:

- Partnership across sectors, with private enterprise, non-profit entities, State and local governments (such as State DOTs, Metropolitan Planning Organizations, other public-sector organizations), and technical/practitioner organizations (such as the American Association of State Highway and Transportation Officials, the

American Public Transportation Association, the Institute of Transportation Engineers, and the Transportation Research Board among others) to move research into practice;

- Technical assistance to stakeholders in implementing and deploying research results;
- Describe the types of dissemination activities you envision as appropriate to communicate your research findings. This should be inclusive of the spectrum of activities and target audiences.
- Also note whether the lead/grant Recipient institution or any consortium member institution is located in a Qualified Opportunity Zone pursuant to 26 U.S.C. §1400Z-1. More information about Opportunity Zones is available at <https://www.transportation.gov/opportunity-zones> and <https://www.cdfifund.gov/Pages/Opportunity-Zones.aspx>.

#### **D.2.2.3.1.E Criterion Five: Program Efficacy**

In this section, describe your management approach and procedures, and how you will implement planning activities and produce results in an effective, timely and cost-efficient manner. Include the following:

- A discussion of the reasoning behind the formation of your consortium and what each member brings to the task of addressing your chosen research need.
- Description of any available institutional resources in addition to those previously noted under **Section D.2.2.3.1.A Research Activities, Capability, and Resources** to carry out planned activities (this may encompass such things as training facilities, human resources, physical facilities, and institutional support capabilities).
- Description of procedures for tracking and coordinating grant activities among consortium members.
- Plans for overall management and oversight of fiscal and technical activities, including methods for ensuring cost efficiency, and a demonstration of the ability to implement the grant in a cost-efficient and timely manner.

#### **D.2.2.4 Required Appendix of Curriculum Vitae for Center Director and Key Personnel**

The following appendix is required and does not count toward the 30-page limit:

- Curriculum Vitae for Center Director and Key Personnel. NOTE: Curriculum vitae are limited to two pages per individual.

The Center Director is the person responsible for ensuring compliance with all UTC Program requirements. For reasons of fiscal management and oversight, a single Center Director must be identified and affiliated with the grant Recipient institution, not with any of the sub-grant consortium-member institutions. No minimum percentage of the Center Director's time is required on the grant, but meaningful, personal involvement by the Center Director in the UTC is expected.

Key Personnel are others who will have a meaningful, personal involvement in the UTC's activities. Include at least one individual from each consortium institution.

**NOTE:** Do not include any other appendices in the application; if an applicant includes additional information as an appendix, reviewers will be instructed not to use it – relevant information should be discussed in the appropriate place within the Written Response section of your application so that reviewers can reflect the information in their assessment of that evaluation criterion.

#### **D.2.2.4.1 Curriculum Vitae for Center Director and Key Personnel**

**▶▶▶ PLEASE ENSURE THAT YOUR APPLICATION DOES NOT CONTAIN ANY PERSONALLY IDENTIFIABLE INFORMATION ◀◀◀**  
(such as Social Security numbers, birth dates, home addresses, etc.)

Information submitted as part of the application may be subject to the Freedom of Information Act (FOIA).

#### **D.2.2.5 Center Budget Plan**

Prepare and submit **Standard Form 424A BUDGET INFORMATION – Non-Construction Programs** reflecting the program information discussed in your Written Response, including required matching funds per **Section C.3 Cost Sharing or Matching Funds** above. The budget should be at the task level, identifying participation of key personnel, outlining participation of consortium members, and demonstrating student engagement.

#### **D.2.2.6 Standard Forms SF424 and SF424B**

Prepare and submit **Standard Forms 424 APPLICATION FOR FEDERAL ASSISTANCE and 424B ASSURANCES – NON-CONSTRUCTION PROGRAMS**.

#### **D.2.2.7 Confirmation of Negotiated Overhead and Fringe Benefit Rates**

Provide a legible copy of the most recent negotiated overhead rates and fringe benefits rates for the lead and all consortium institutions, including the name and telephone number of the Federal audit agency representative.

### **D.3 System for Award Management (SAM) and Dun and Bradstreet Universal Numbering Systems (DUNS)**

Each lead applicant institution is required to:

- Be registered in the System for Award Management (SAM, <http://www.sam.gov>) before submitting your application;
- Continue to maintain an active SAM registration with current information at all times during which you have an active Federal award of application or plan under consideration by a Federal awarding agency, and
- Provide a valid Dun and Bradstreet Universal Numbering System (DUNS) number for the lead institution in its application.

*DOT will not make an award to an applicant until the applicant has complied with all applicable SAM and DUNS requirements and, if an applicant has not fully complied with the requirements*

*by the time DOT is ready to make an award, DOT may determine that the applicant is not qualified to receive the award and use that determination as a basis for instead making the award to another applicant.*

## **D.4 Submission Dates and Times**

### **D.4.1 Letters of Intent**

OST-R requests that Letters of Intent be received by **5:00PM EDT, MONDAY, MAY 4, 2020**. The Letter of Intent should be submitted to OST-R as a PDF attachment in an e-mail, sent to [UTCgrants@dot.gov](mailto:UTCgrants@dot.gov).

### **D.4.2 Application**

**Your Tier 1 UTC application must be submitted to Grants.gov no later than 11:59PM EDT, MONDAY, JUNE 1, 2020.** Grants.gov will provide you with an acknowledgement of your submission, and OST-R will use the Grants.gov receipt date and time to determine whether an application has been submitted by the deadline.

**Hard copies of the application (see Section D.6 Other Submission Requirements) must be received by OST-R no later than 5:00PM EDT, WEDNESDAY, JUNE 3, 2020** (note that this is later than the Grants.gov deadline).

Your application will be considered complete as initially received by us from Grants.gov; if you need to make changes after submission but before the due date, you will need to withdraw and resubmit your application as a whole prior to the submission deadline.

## **D.5 Funding Restrictions**

The grant funds intended for award under this NOFO do not apply to, and may not be used for, construction activities or projects.

Use of grant funds, including those provided by the UTC as its required matching funds, for the purchase of equipment with a unit value of \$5,000 or more, or for foreign travel, requires advance approval from OST-R.

Pre-award costs, incurred from the date DOT announces the identities of the selected applicants, are those incurred directly pursuant to the applicant's proposed budget and in anticipation of the Federal award where such costs are necessary for the efficient and timely performance of the scope of work. Such costs are allowable only to the extent that they would have been allowable if incurred after the date of the Federal award and only with the written approval of OST-R.

## **D.6 Other Submission Requirements**

In addition to submitting your application electronically through Grants.gov, you must also submit to the UTC Program office hard copies of the following documents:

- Two copies each of the Written Response and the appendix,
- One copy each of Standard Forms SF424, SF424A, and SF424B, and

- One copy of the negotiated overhead and fringe benefits rates for all members of the consortium.

The hard copies must contain identical information to what you submitted through Grants.gov. Non-permanent binding (clips, ties, pocket folders) is preferred to allow for ease of duplication. OST-R recommends that you use a delivery or courier service that allows you to track and document when you sent the package and when/by whom it was received.

Hard copies must be received by OST-R **no later than 5:00PM EDT, WEDNESDAY, JUNE 3, 2020**. An application will not be rejected if the hard copies are not received by the deadline, but failure to meet the submission deadline will be noted by reviewers as part of their assessment of your application.

Please address your hard copy submittal as follows, using all the information shown:

Amy Stearns  
US Dept. of Transportation/OST-R  
Mail Code RDT-30, Work Station E33-472  
1200 New Jersey Avenue, SE  
Washington, DC 20590-0001

Contact telephone number regarding hard-copy submittal only: (202) 366-4957.

**▶▶▶ PLEASE ENSURE THAT YOUR APPLICATION DOES NOT CONTAIN ANY  
PERSONALLY IDENTIFIABLE INFORMATION ◀◀◀**  
(such as Social Security numbers, birth dates, home addresses, etc.)

Information submitted as part of the application may be subject to the Freedom of Information Act (FOIA).

## **SECTION E. APPLICATION REVIEW INFORMATION**

### **E.1 Criteria**

Using the evaluation criteria stated in Section D.2.2.3.1 above, the Secretary of Transportation will select one applicant for each of the four Topic Areas stated in this NOFO:

- Topic Area 1: Highly Automated Transportation Systems Research, \$1,925,000
- Topic Area 2: Communications Technology and E-Commerce Effects on Travel Demand, \$1,000,000
- Topic Area 3: Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities, \$1,000,000
- Topic Area 4: Strategic Implications of Changing Public Transportation Travel Trends, \$1,000,000

In conformance with the transparency requirements of the FAST Act, an applicant may (upon request) receive copies of materials used in the evaluation of its proposal after the conclusion of this competition. Rejections of an application does not prejudice against future applications submitted for other DOT NOFOs.

## **E.2 Review and Selection Process**

### **E.2.1 Compliance Review**

After the closing date, OST-R staff will conduct an initial review of applications to identify any that are incomplete to the degree that a merit review could not be conducted, significantly non-responsive to the directions in **Section D.2.2 Applications** of this NOFO, or ineligible per **Section C.1 Eligible Applicants** above to receive a UTC grant. Any such applications will be rejected and the applicants notified.

### **E.2.2 Merit Review**

Submitted applications deemed to be compliant will be sorted per the four Topic Areas. The applications will be provided to reviewers consisting of appropriate subject matter experts from both within and outside DOT. Reviewers will base their evaluations on the criteria identified and addressed in **Section D.2.2.3.1 Response to Evaluation Criteria** above. Reviewers will rate each proposal as highly recommended, recommended, or not recommended for funding.

The reviewers' recommendations will be forwarded to a committee comprised of the Assistant Secretary for Research and Technology, the Administrator of the Federal Highway Administration, or delegates, and other DOT modal administrators as appropriate. This committee will recommend recipients for the four available Tier 1 UTC grants. The final decisions as to grant recipients will be made by the Secretary of Transportation.

OST-R intends to fund one UTC in each of the four Topic Areas; however, if no meritorious application is received in a Topic Area, an additional, meritorious UTC may be selected in another Topic Area.

OST-R reserves the right to request from any or all applicants such additional information as it may deem necessary to complete its review of applications. In conformance with the transparency requirements of the FAST Act, an applicant may (upon request) receive copies of materials used in the evaluation of its proposal after the conclusion of this competition.

### **E.2.3 Risk Assessment**

Federal awarding agencies must report information to the Federal Awardee Performance and Integrity Information System (FAPIIS, <http://www.fapiis.gov>) about agreements with a non-Federal entity that involved materials failure to comply with the award terms and conditions, suspension or debarment proceedings, or similar integrity or prior-performance issues. A non-Federal entity may submit comments in the record in FAPIIS about any information that Federal awarding agencies had reported to the system about that non-Federal entity, for consideration by the Federal awarding agency in making future Federal awards to the non-Federal entity.

Prior to making an award to a non-Federal entity, Federal agencies must determine whether that non-Federal entity is qualified to receive that award. In making a determination about any potential risk posed by an applicant being considered for a UTC grant, the UTC Program will review and take into consideration any information about the application that is in SAM (see **Section D.3** above) and FAPIIS.

## SECTION F. FEDERAL AWARD ADMINISTRATION INFORMATION

### F.1 Federal Award Notices

The funding and authorization available to OST-R for this NOFO are from Federal FY 2020 funds. OST-R's target date for awarding the four Tier 1 UTC grants being competed is October 1, 2020. Funds awarded may be spent through a time period specified in **Appendix A: Topic Areas**.

The grant award will be in the form of a written grant agreement bearing the signature of the Deputy Assistant Secretary of Transportation for Research and Technology, or delegate. Such agreement in duplicate is expected to be sent via Federal Express to the selected institution using the address provided on the SF424 Application for Federal Assistance filed with the application. The agreement will ask the institution to countersign one of the duplicate agreements and return it to OST-R.

Pre-award costs incurred from the date DOT announces, typically through a press release, the identities of the selected applicants until the effective date of award documents issued by OST-R are allowable only to the extent that they would have been allowable if incurred after the date of the Federal award and only with the written approval of OST-R.

### F.2 Administrative and National Policy Requirements

#### Data Management Plans (DMPs)

All grants to UTCs are administered in accordance with 2 CFR Part 200, 49 U.S.C. § 5505, and other applicable Federal laws. In accordance with the Office of Management and Budget's Open Data Policy and the DOT Departmental Data Release Policy (DOT Order 1351.34, adopted March 28, 2011; available at <https://www.transportation.gov/digitalstrategy/policyarchive/Departmental-Data-Release-Policy>), each UTC awardee is required to create a Data Management Plan (DMP). In the DMP, a UTC awardee must propose program-level strategies to deposit Digital Data Sets resulting from DOT-funded scientific research in a repository that enables and allows for public access and sharing. The DMP will be reviewed and must be approved by the Office of the Assistant Secretary for Research and Technology.

The grant agreement will state a date by which each of the newly awarded Tier 1 UTCs must develop a DMP and submit it to OST-R. Failure by the awardee to submit a DMP to OST-R will result in the withholding of UTC grant funds. A great deal of useful information about preparing a DMP is available on the DOT National Transportation Library website, <https://ntl.bts.gov/public-access>.

#### General Provisions of Grants for University Transportation Centers

A document containing general terms and conditions affecting UTC grants will be included as one part of the grant agreement. It will be similar to the document in use for existing UTC grants, posted on the UTC Program website at <https://cms8.dot.gov/utc/fast-act-general-provisions-grants-utcs>.



Executive Order 13864 (March 21, 2019) on Improving Free Inquiry, Transparency, and Accountability at Colleges and Universities requires the head of each Federal agency to encourage institutions of higher education to foster environments that promote open, intellectually engaging, and diverse debate, including through compliance with the First Amendment for public institutions and compliance with stated institutional policies regarding freedom of speech for private institutions. Free inquiry is an essential feature of our Nation's democracy, and it promotes learning, scientific discovery, and economic prosperity. Grant Recipients and Sub-Recipients should foster environments that promote open, intellectually engaging, and diverse debate in order to avoid environments that stifle competing perspectives, impede research, and undermine learning.

### **F.3 Reporting**

The Center Director, on behalf of the UTC, shall provide the following reporting products in a timely and consistent manner:

- Project information submission and entry to the Transportation Research Board's Research in Progress (RiP) and Transportation Research Information Database (TRID) research information repository systems,
- A quarterly progress report on ongoing research activities,
- Quarterly submission of Standard Form SF-425 Federal Financial Report,
- Periodic project presentations,
- Submission of inventions to the Interagency Edison (iEdison) system,
- Development and submission of a data management plan,
- An executive summary standalone report at the commencement of the research project,
- Final research report, and
- Any other deliverables identified by the respondent in the proposal research plan.

### **SECTION G. FEDERAL AWARING AGENCY CONTACT**

Until 4:00 PM EDT on WEDNESDAY, MAY 27, 2020, questions about this NOFO or the UTC Program in general may be directed to the following e-mail address: [UTCgrants@dot.gov](mailto:UTCgrants@dot.gov). Questions posed by applicants will be posted along with OST-R's responses on the UTC Program website at <https://cms8.dot.gov/content/university-transportation-centers>, in order that all potential applicants may benefit equally from any additional information provided in the responses.

**NOTE:** *Until a formal announcement of award is issued, no communication by the government, either written or oral, shall be interpreted as a promise that an award will be made.*

## APPENDIX A: TOPIC AREAS

This section provides detailed information about each Topic Area for which DOT will award a Tier 1 UTC. The Written Response portion of your application should be guided where noted in **Section D.2.2.3 Written Response** by this information pertaining to your chosen Topic Area.

## 1. Highly Automated Transportation Systems Research

**Grant Amount:** \$1,925,000  
**Grant Duration:** 24 months  
**FAST Act Research Priority Area:** Promoting Safety

### Research Statement Abstract:

Progress on the path toward integrating automated systems into the transportation domain for all modes of transportation (surface, aviation, and maritime) will be aided by additional research addressing challenges associated with ensuring resilient Positioning, Navigation, and Timing (PNT) services to support automated systems. This University Transportation Center will complement the new Center of Excellence for Highly Automated Transportation Systems being implemented within the US DOT. Among the critical needs is research to support securing cyber resilient PNT receivers for use in automated systems. This UTC will carry out research to support the development of standards and or prototypes and incorporate existing U.S. Government guidance.

Based on Executive Order 13905, Strengthening National Resilience through Responsible Use of Positioning, Navigation, and Timing Services (PNT), "It is the policy of the United States to ensure that disruption or manipulation of PNT services does not undermine the reliable and efficient functioning of its critical infrastructure. The Federal Government must increase the Nation's awareness of the extent to which critical infrastructure depends on, or is enhanced by, PNT services, and it must ensure critical infrastructure can withstand disruption or manipulation of PNT services. To this end, the Federal Government shall engage the public and private sectors and promote the responsible use of PNT services."

This effort will include working with specification developers, manufacturers, and industry stakeholders. This research will require substantial knowledge of established cybersecurity principles in developing cyber secure PNT receivers, including standards for GPS receivers and other PNT sensors for automated vehicles. Such activity is aimed at improving not only the safety of automated vehicles that use PNT systems, but protecting the intellectual property of U.S. academic institutions related to PNT, and by using established guidance, helping to achieve a useful product in the timeline envisioned for the UTC grant.

The Written Response of the application should include discussion of how the proposed UTC will address the following elements:

1. Review of relevant literature and studies related to GPS/GNSS threats and vulnerabilities to automated vehicles for all modes of transportation from interference, spoofing, and data manipulation, leveraging information that already that has been collected by the U.S. Department of Transportation;
2. PNT threat scenarios to evaluate risks to automated vehicles for all modes of transportation from interference caused by jamming, measurement spoofing, and data spoofing.
3. Potential impacts and risk of interference or spoofing of automated vehicle and identification of mitigation methods. A risk management report that:
  - a. Documents the risk mitigation and acceptance choices made by the UTC regarding the development of competent (cyber secure) PNT receivers and standards for automated vehicles including: the strategic, operational, and

budgetary considerations that informed those choices; and any accepted risk, including from unmitigated vulnerabilities.

4. Development and documentation of standards for and conduct testing of cyber resilient PNT receivers for use in automated systems that incorporate existing U.S. Government guidance including, but not limited to:
  - a. The GPS Interface Specification (IS GPS 200K), specifically sections with valid data checking for parameters (e.g., Table 20-III Ephemeris Parameters, pg. 98).
  - b. The DHS Best Practice Document: Improving the Operation and Development of GPS Equipment Used by Critical Infrastructure (especially the section on Development Strategies for Manufacturers and the section on Research Opportunities).
  - c. Methods whereby PNT computations should be tested for resiliency to invalid parameter inputs, e.g. as specified in the current version of GPS Interface Specification IS-GPS-200, Navstar GPS Space Segment/Navigation User and consideration of filtering methods and reporting of GPS spoofing/interference as described in NASA Technical Standard 1006 (NASA-STD-1006).

The Written Response of the application should include:

1. A discussion of processes, research methods, and databases that can be used to carry out the body of the research referenced above. The research team should communicate their command of the subject by discussing how various research methods and data sources might be integrated into a strategy for carrying out the above-noted research. This might include how data collection, analysis, modeling, case studies, expert engagement, or other research activities could be applied to this topic.
2. A plan for securing stakeholder engagement/collaboration/cooperation and a strategy for ensuring the research builds from current state of knowledge and coordinates with stakeholders with respect to standards and best practices.
3. A discussion of how the project team will synthesize findings. The synthesis should acknowledge and offer comments on how findings, impacts, uncertainties, and future research and data needs will be developed and communicated.
4. A project delivery schedule, the nature and timing of deliverables inclusive of those enumerated in **Section F.3 Reporting**. The mechanisms for stakeholder input and peer review, including at least one member from USDOT, should be described.

## 2. Communications Technology and E-Commerce Effects on Travel Demand

**Grant Amount:** \$1,000,000  
**Grant Duration:** 18 months  
**FAST Act Research Priority Area:** Improving Mobility of People and Goods

### Research Statement Abstract:

A very significant factor impacting travel demand levels is the substitution of communications for travel. This trend has been enabled by near ubiquitous availability of high-speed internet communications and smart phone availability that have enabled rapid growth in telecommuting, e-commerce, distance learning, electronic document transmittal, and other communication venues that have diminished the need and desire for in-person participation in activities. While much of the transportation profession focuses on phenomena such as transportation network companies, shared bike and scooter services, changes in transit ridership, and the prospect of automated vehicles, empirical evidence suggests that the substitution of communications for travel has, to date, had a far more pronounced effect on travel trends. For example, working at home as the usual mode has grown to comprise over 5 percent of the workforce and is the fastest changing "travel" means for workers. E-commerce has grown steadily to comprise a double-digit share of retail sales. Distance learning has proliferated and electronic banking and bill paying are becoming the norm. Contemporary media frequently note the role of social media replacing interpersonal communications and high definition large screen video undermining attendance at sporting events and movie theaters. Remote medicine and medical monitoring are even beginning to influence travel demand for healthcare services. In addition to substituting communications for travel, enhanced communications in the form of finding convenient locations for attaining desired products and services and determining optimal travel paths are other ways communication minimizes travel.

Very limited research has addressed the potential magnitude of this substitution trend as deployment of enhanced communication capabilities reach an ever-larger share of the population and more business, government and entertainment venues develop web based or smart phone based services. Activities such as online gambling, stakeholder engagement and online voting exemplify some of the newer markets for communications substituting for travel.

This research initiative should comprehensively explore current trends and seek to gain insight into how communications substitution might influence future travel demand. This exploration should include a review of the breadth of activities that might be conducive to being accommodated via communications in lieu of travel for on-site presence or transactions. This research should include a comprehensive review of changes to date coupled with explorations of how these trends might be extrapolated into the future based on the nature of activities, human behaviors, and traveler preferences. The extent of substitution may be dependent upon the nature of the activity, personal preferences, the burdensomeness (distance, level of service, cost, etc.) of the travel relative to the nature and duration of the activity, and other considerations. Travel is an opportunity for social interaction, a factor that may dampen the ultimate extent of communications substitution. Time and money saved by substituting communications for travel in some contexts may be redeployed for other travel opportunities. Some temperaments, personalities, learning styles, etc. may be less conducive to remote communications. Other factors such as different employer perspectives on productivity implications of telecommuting may influence the ultimate magnitude of some substitution phenomenon.

The Written Response of the application should include discussion of how the research will address the following elements.

1. Comprehensive review of relevant literature and databases that will be used to explore this issue. This should include literature and data regarding travel behavior, activity patterns, trip generation rates, changes on land use demand by functional purpose, personal motivations and attitudes regarding travel, elasticities of travel demand with respect to various attributes and other related literature and data sources. Databases on household and personal travel, trip generation, person activity patterns and time use, activity participation data, industry trends in market acceptance (teleworking/working at home, distance learning, e-commerce, etc.) and other sources as available should be identified and acknowledged in the research plan. Case studies, new survey data, preference surveys, consumer expenditure data, and other additional data may be gathered to support the initiative.
2. Identification and/or development and exploration of theories and/or frameworks for exploring and analyzing the nature and implications of these trends. This information can serve as the basis for adding perspective and exploring how analyses, modeling, or other research methods might help enhance the current understanding and future potential and impacts associated with this phenomenon.
3. In-depth exploration of critical issues relating to the role of communication as a substitution for travel. The research team should identify and execute additional research to enhance the level of knowledge regarding communications substitution for travel. These activities might include data collection, analysis, modeling, case studies, expert engagement, or other research activities to enhance the level of knowledge and understanding. The specific test should be determined by the research team based on findings to date and their judgment as to the most promising avenues for further analysis.
4. Synthesis of findings and implications. The proposal should identify how the project team will synthesize findings. At a minimum, the synthesis should identify findings regarding the current extent and future expectations for communications substitution, significance in terms of overall travel trends, impacts, uncertainties, and future research and data needs.
5. The project delivery schedule, the nature and timing of deliverables inclusive of those enumerated in **Section F.3 Reporting**. The mechanisms for stakeholder input and peer review, including at least one member from USDOT, should be described.

### 3. Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities

**Grant Amount:** \$1,000,000  
**Grant Duration:** 18 months  
**FAST Act Research Priority Area:** Improving Mobility of People and Goods

#### Research Statement Abstract:

The development of automated and shared transportation vehicles and services provides an opportunity to make affordable accessible mobility available to segments of the population that for various reasons have had their mobility limited. This is a significant benefit to individuals whose physical, sensory, or cognitive disabilities or associated low incomes have curtailed their travel options. Various constituencies are interested in understanding the potential impact of automated vehicles and mobility services on travel associated with enhancing mobility. To date, research that explores the latent demand for travel from these market segments analyzes the implications for vehicle fleet needs and features, and estimates the impacts on travel volume and the subsequent consequences has been limited. Enhanced mobility for these populations can enable independent mobility, meaningfully improving their economic opportunity and quality of life. Additionally, demands on family members, social service providers, and others may be lifted when travel access needs are addressed.

This research effort will explore various populations that can be helped by deploying such technologies and services and will provide insight regarding the magnitude of latent demand that might materialize as vehicles and mobility services evolve. This research effort should integrate knowledge regarding demographic, geographic, economic, medical and functional mobility characteristics of current and projected future populations to develop scenarios of and quantify future travel demand and impacts. In addition to changes in the percentage of people with disabilities in the population, the demand for mobility services may change as demographic and cultural changes impact the rolls of parents, children, siblings, spouses or other non-institutional resources assist in meeting mobility needs.

Various groups have expressed an interest in understanding the market potential for accessibility enhancing features and services, and a broad array of stakeholders is interested in accessible and barrier free mobility.

This research effort should identify populations based on mobility needs and traveler characteristics, estimate their current and future size, develop scenarios of incremental travel demand based on enhanced mobility opportunities, and explore the impacts with respect to future travel demand.

The Written Response of the application should include discussion of how the research will address the following elements.

1. Comprehensive review of relevant literature and databases that will be used to explore this issue. This should include literature regarding trends in the travel behavior of people with disabilities, and evidence of changes in travel propensity for individuals in subject population segments whose mobility constraints are ameliorated (taking into account the extent to which the travel demand of people with disabilities is also impacted by other often related conditions such as physical stamina, financial resources, weather exposure sensitivity, etc.) as well as the accommodations to enable access beyond the vehicle. Knowledge of the elasticities of travel demand for these populations with respect to

various travel attributes (ease of vehicle access, cost of travel, wait/schedule time, group size, safety and security, trip purpose eligibility for subsidized services, reliability, need for a travel attendant, etc.) should be gleaned from available literature and data.

2. Identification and/or development and exploration of strategies and/or frameworks for exploring and analyzing this research question should be provided. The work plan should include activities to produce a comprehensive descriptive analysis of the size, characteristics, and current travel of the target populations. This should include an understanding of how travel is currently accomplished. The work plan should explore how analyses, modeling, or other research methods can help enhance our understanding of how mobility levels of these populations might change as a result of new technologies and business models for delivering mobility, especially as it enhances access to the vehicles and changes the cost and availability of travel options.
3. A discussion of processes, research methods, and databases that can be used to carry out the body of the research referenced above. The research team should communicate their command of the subject by discussing how various research methods and data sources might be integrated into a strategy for carrying out the above-noted research. This might include how data collection, analysis, modeling, case studies, expert engagement, or other research activities could be applied to this topic.
4. How the project team will synthesize findings. The synthesis, at a minimum should identify findings regarding current conditions and future scenarios of travel demand and means of accommodation for the subject population segments. The synthesis should acknowledge and offer comments on how findings, impacts, uncertainties, and future research and data needs will be developed and communicated.
5. The project delivery schedule, the nature and timing of deliverables inclusive of those enumerated in **Section F.3 Reporting**. The mechanisms for stakeholder input and peer review, including at least one member from USDOT, should be described.



#### 4. Strategic Implications of Changing Public Transportation Travel Trends

**Grant Amount:** \$1,000,000  
**Grant Duration:** 18 months  
**FAST Act Research Priority Area:** Improving Mobility of People and Goods

##### Research Statement Abstract:

Over the past 5 years, public transportation ridership in the United States has declined nearly 8 percent with declines in certain metropolitan areas greater than 20 percent. This has occurred simultaneously with record economic activity, population growth and generally enhanced transit capacity. A growing body of research has identified a host of contributing factors including increased telecommuting and e-commerce, competition from transportation network companies, significant increases in auto availability complemented by low fuel and auto finance costs, increased driver license levels, dispersion of low income population from well served transit areas to less transit accessible environments, and robust population growth more common in geographies with less extensive transit service levels.

These meaningful changes in ridership coupled with anticipation of increasingly competitive options such as the prospect of automated mobility-as-a-service/mobility on demand travel choices, more efficient and electrified personal vehicles, more micromobility options for short urban trips and increasing opportunities to forego travel by substitution of communications, have created uncertainty as to the future demand, financial sustainability, and strategic role for public transportation. While the fundamental motivations for public transportation - providing a travel option especially for those persons without access to personal vehicles and providing a resource efficient means of moving volumes of people - remain highly supported, the extent to which public transportation services can evolve to sustained or enhance their contribution towards attaining these goals merits study. Uncertainty regarding future competitiveness is exacerbated as major public transportation capital investments typically depend on a 50+ year deployment and amortization schedules which raises questions about investment risks for an increasingly capital-intensive industry.

This research initiative will synthesize current national trends, explore the variance in trends across contexts, and identify the strategic challenges and opportunities associated with positioning public transportation to prepare for the future. This research initiative will frame current trends, informed by literature review, data analysis and stakeholder engagement and provide findings and recommendations with respect to how transportation planning, policy, and investment priorities might change in the context of these findings.

The Written Response of the application should include discussion of how the research will address the following elements.

1. A comprehensive review of relevant literature and databases that will be used to explore this issue. This should include at least literature regarding ridership, cost, performance, productivity, funding, governance, and impacts for public transportation and competing modes. Literature that provides insights on evolving competitiveness of modes of travel that are competing with public transportation should be included as available. Existing literature on the emergence of multimodal governance and mobility-as-a-service models, strategies to address sustainable funding for public transportation, and other relevant literature that address the future of public transportation should be included.

2. The project team's strategy for addressing this topic area. The plan should reference processes, research methods, and databases that can be used to carry out the body of the research referenced above. The research team should communicate their command of the subject by discussing how various research methods and data sources might be integrated into a strategy for carrying out and organizing the above-noted research. This should include a discussion of how stakeholders or stakeholder perspectives will be considered.
3. Synthesis of findings and implications. The proposed research plan should identify a strategy for deriving findings and scenarios as to how public transportation could evolve in the context of the emerging trends identified in the research effort.
4. The project delivery schedule, the nature and timing of deliverables inclusive of those enumerated in **Section F.3 Reporting**. The mechanisms for peer review, including at least one member from USDOT, should be described.