

U.S. Department of Transportation

Notice of Funding Opportunity Number 693JJ322NF00001

“Complete Trip - ITS4US Deployment Program Phases 2 & 3”

Timeline for Awards	Estimated Date
Notice of Funding Opportunity Issue Date:	11/30/2021
*Webinar on NOFO for Eligible Applicants:	12/14/2021 @ 2 pm Eastern
Draft Application Due:	1/28/2022 by 5 pm Eastern
Final Application Due:	3/11/2022 by 5 pm Eastern
Oral Presentations to DOT:	3/28/2022-4/08/2022
Cooperative Agreement Award:	5/13/2022

*On 11/30/2021, USDOT e-mailed the webinar registration invitation directly to eligible applicants.

On behalf of the U.S. Department of Transportation, this Notice of Funding Opportunity is issued by the Federal Highway Administration (FHWA), Office of Acquisition and Grants Management. Accordingly, the www.grants.gov notice will appear under the Agency name of FHWA.

Summary Information

Funding Opportunity Summary:	This Notice of Funding Opportunity (NOFO) is Set-Aside for Complete Trip – ITS4US Deployment Program Phase 1 Projects in progress.
Federal Agency Name:	U.S. Department of Transportation (DOT) Federal Highway Administration (FHWA) Office of Acquisition and Grants Management 1200 New Jersey Avenue, SE Washington DC 20590 Attn: Sarah Tarpgaard, HCFA-32
Funding Opportunity Title:	“Complete Trip - ITS4US Deployment Program Phases 2 & 3”
Announcement Type:	This is the initial announcement of this funding opportunity. This is not a follow-on NOFO.
Funding Opportunity Number:	693JJ322NF00001
Type of Award:	Cooperative Agreement (multiple awards anticipated)
Assistance Listing Number (ALN):	20.200 Highway Research & Development (formerly Catalog of Federal Domestic Assistance (CFDA) Number)
Eligibility:	Eligibility for this funding opportunity is limited to DOT-selected Complete Trip – ITS4US Deployment Program Phase 1 Projects (https://www.its.dot.gov/its4us/index.htm). Refer to SECTION C – ELIGIBILITY INFORMATION for additional information.
Draft Application Due Date:	By 5 PM Eastern on 1/28/2022 by Email to sarah.tarpgaard@dot.gov .
Final Application Due Date:	By 5 PM Eastern on 3/11/2022 via www.grants.gov .
Questions:	Submit Questions to: Sarah.Tarpgaard@dot.gov

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NOTE: DOT uses www.grants.gov for receipt of all applications. Applicants must register and use the system to submit applications electronically. Applicants are encouraged to register in advance of the submission deadline and to register to receive notifications of updates/amendments to this notice. Approval of user registrations for the site may take multiple weeks. It is the Applicant's responsibility to monitor for any updates to this notice.

SECTION A - PROGRAM DESCRIPTION

1. STATEMENT OF PURPOSE

The purpose of this NOFO is to solicit applications for multiple cooperative agreement awards to provide funding support for the implementation of the Complete Trip – ITS4US Deployment Program Phases 2 and 3. This competition is limited to the following deployment projects previously selected by DOT under a full and open competition (Broad Agency Announcement (BAA) Number 693JJ3-20-BAA-0004). The previously selected deployment projects received contract awards for Phase 1 Concept Development in January 2021. The selected projects and Phase 1 contract numbers are listed below, and described online at <https://www.its.dot.gov/its4us/index.htm>.

Project	Contract Number
Transportation Data Equity Initiative Phase 1 Lead: University of Washington	693JJ321C000004
Complete Trip Deployment in Buffalo Phase 1 Lead: ICF International	693JJ321C000005
Health Connector for the Most Vulnerable Phase 1 Lead: Heart of Iowa Regional Transit Agency	693JJ321C000006
Trip Planning for All Phase 1 Lead: California Association of Coordinated Transportation	693JJ321C000007
Safe Trips in a Connected Transportation Network Phase 1 Lead: Atlanta Regional Commission	693JJ321C000008

The Phase 1 full and open BAA stated the following:

- Upon successful completion of the Concept Development Phase 1, DOT may issue a site-specific assistance agreement covering the second and third phases of the effort, namely a Design, Build, and Test (Phase 2) and Operate and Evaluate Phase (Phase 3).
- Respondents to this BAA are expected to represent partnerships among public sector agencies, non-profit organizations, and the private sector. Academic institutions may also play a role. The only requirement for teaming is that a public-sector organization capable of forming and leading a cooperative agreement for Phases 2 and 3 must be a part of the Phase 1 team.
- The Government is not obligated to make an award of a Phase 2 or Phase 3 cooperative agreement as a result of selecting an awardee for a Phase 1 contract.

Based on the BAA statements above, only projects selected under the Phase 1 BAA are eligible for a follow-on assistance agreement to perform Phases 2 and 3. Accordingly, this NOFO is set-aside for the five projects listed above. Further, a public-sector organization involved in the Phase 1 team must be identified to serve as the Prime Applicant and Awardee if the project is selected to receive a follow-on assistance agreement to perform Phases 2 and 3 (See Section C – Eligibility Information).

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*On 11/30/2021, USDOT e-mailed the webinar registration invitation directly to eligible applicants.

2. LEGISLATIVE AUTHORITY

Specific statutory authority for conducting this effort is found under section 516(a) of title 23, United States Code (U.S.C.), which authorizes the Secretary of Transportation to “carry out a comprehensive program of intelligent transportation system research and development, and operational tests of intelligent vehicles, intelligent infrastructure systems, and other similar activities that are necessary to carry out this chapter.”

Funding is authorized under section 6002(a)(4) of Public Law 114-94, the Fixing America’s Surface Transportation (FAST) Act and extensions.

The authority to award a cooperative agreement for this effort is found under section 502(b)(3) of title 23, U.S.C., Surface Transportation Research, which states the following:

(3) COOPERATION, GRANTS, AND CONTRACTS. —The Secretary may carry out research, development, and technology transfer activities related to transportation—

- (A) Independently,
- (B) In cooperation with other Federal departments, agencies, and instrumentalities and Federal laboratories, or

(C) By making grants to, or entering into contracts and cooperative agreements with one or more of the following: the National Academy of Sciences, the American Association of State Highway and Transportation Officials, any Federal laboratory, Federal agency, State agency, authority, association, institution, for-profit or nonprofit corporation, organization, foreign country, or any other person.

Cost Share: Per section 516(c) of title 23, U.S.C., “The Federal share payable on account of any project or activity carried out under subsection (a) shall not exceed 80 percent.”

3. BACKGROUND

The Intelligent Transportation Systems Joint Program Office (ITS JPO) within DOT is responsible for conducting research on behalf of the Department and all major modes to advance transportation safety, mobility, and environmental sustainability through electronic and information technology applications, known as Intelligent Transportation Systems (ITS).

The DOT ITS Program focuses on intelligent vehicles, intelligent infrastructure, and the creation of an intelligent transportation system through integration with and between these two components. The Federal ITS Program supports the overall advancement of ITS through investments in major research initiatives, exploratory studies and a deployment support program including technology transfer and training.

This NOFO supports “The Complete Trip – ITS4US Deployment Program” for the ITS JPO within DOT. The Complete Trip - ITS4US Deployment Program is a \$40 million multimodal effort, led by the ITS JPO and supported by the Office of the Secretary of Transportation (OST), FHWA, and the Federal Transit Administration (FTA) to identify ways to provide more efficient, affordable, and accessible transportation options for underserved communities that often face greater challenges in accessing essential services. The program aims to solve mobility challenges for all travelers with a specific focus on underserved communities, including people with disabilities, older adults, low-income individuals, rural residents, veterans, and limited English proficiency travelers. This program will enable communities to build local partnerships, develop and deploy integrated and replicable mobility solutions to achieve complete trips for all travelers.

To carry out the deployment program, DOT conducted a full and open procurement, and awarded five firm-fixed-price Contract awards for the Deployment Concept Development/Planning Stage, lasting 12 months (Phase 1).

Under this NOFO, DOT now intends to award cost-reimbursement, cost-sharing cooperative agreements for the design/testing and operation/evaluation phases (Phases 2 and 3) of the deployment program.

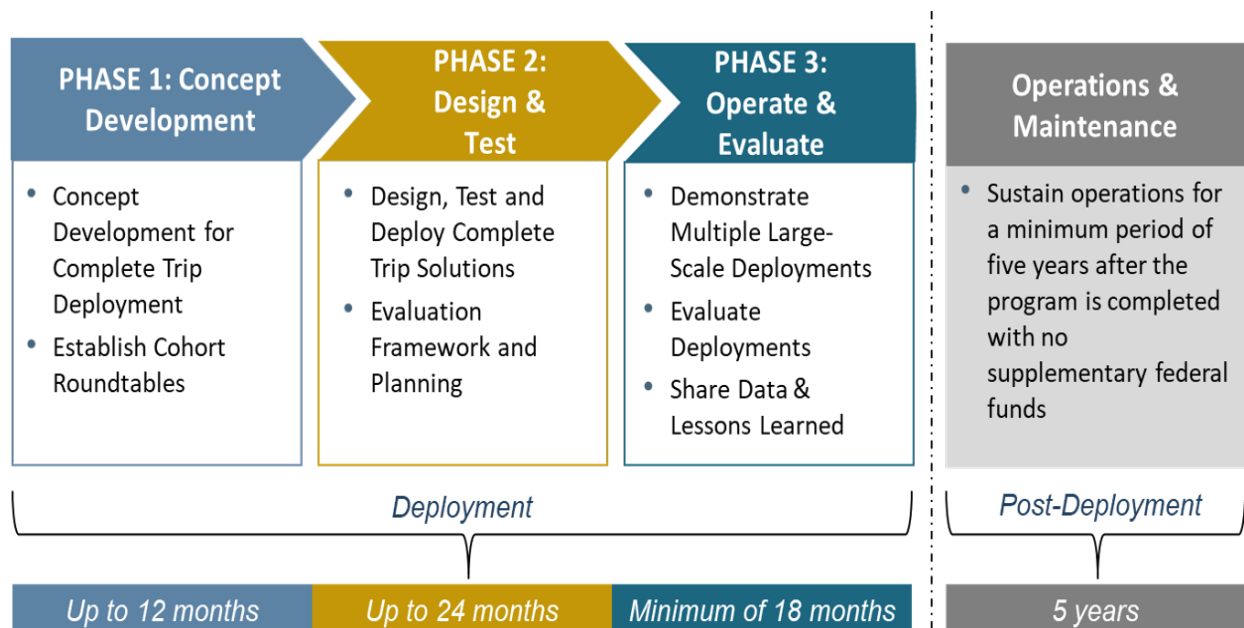
Phases of the Deployment Effort. Each deployment project is expected to be developed in three distinct DOT-funded phases as illustrated in the figure below. In addition, each deployment is required to sustain operations for a minimum period of five years after Phase 3 is completed with no supplementary program funding.

Phase 1: Concept Development

Phase 2: Design and Testing

Phase 3: Operations and Evaluation

Post-Deployment: Operations & Maintenance



- Phase 1: Concept Development** – up to 12 months (in progress under separate contract awards). In this phase, the preliminary proposed idea is developed into a structured concept that is suitable for further design, building, testing, and operation. The structured concept will include identifying specific performance measures, targets, and capabilities associated with performance monitoring and performance management. Key deliverables include:
 - Concept of Operations
 - System Requirements
 - Integrated Complete Trip Deployment Plan

- **Phase 2: Design/Build/Test** – up to 24 months. In this phase, the deployment concept is designed in detail, built, and tested prior to operation.
 - System Architecture and System Design Development
 - Application Enhancement and Integration
 - System Deployment
 - Test Planning
 - System Test and Demonstration
- **Phase 3: Operate and Evaluate** – minimum of 18 months. In this phase, the tested deployment applications and technologies are placed into operational practice. The impact of the deployment on a set of key performance measures will be monitored and reported on a daily, weekly, and monthly basis. Further, performance and other data supporting a comprehensive assessment of deployment impacts are to be shared with a DOT-identified independent evaluator.

4. VISION, MISSION, AND GOALS OF THE DEPLOYMENT

The Complete Trip - ITS4US Deployment Program has defined the program's vision, mission, and goals as stated below:

Vision: Innovative and integrated complete trip deployments to support seamless travel for all users across all modes, regardless of location, income, or disability.

Mission: Facilitate the integration and deployment of emerging technologies, along with innovative and replicable, traveler-centric partnerships, business models and practices to foster reliable, spontaneous, independent, safe, affordable, accessible, and efficient mobility options for all travelers.

Goals: The goals of the program are to:

1. **Spur high-impact integrated complete trip deployments nationwide.** Assist the transportation industry in tackling the difficult challenge of providing complete trips for all travelers nationwide by streamlining and expediting solution development through complete trip deployments. High impact, replicable, integrated solutions developed by complete trip deployments will reduce the cost of future deployments of these critical personal mobility enhancements.
2. **Identify needs and challenges by populations.** Identify the transportation challenges and needs of communities to support mobility options for all travelers regardless of location, income, or disability. Populations within each community

have different needs and challenges in accessing transportation options to improve their quality of life.

3. **Develop and deploy mobility solutions that meet user needs.** Support and encourage communities to take revolutionary steps to integrate advanced technologies – especially those that enable adaptive and assistive transportation technologies – into the management and operations of the transportation network, including non-motorized modes. Engage key partners, within the federal government, the research community, stakeholder organizations, and private industry to support development of potential solutions for all travelers.
4. **Measure the impact of integrated deployments.** Quantify and evaluate the impact of the integration of these advanced technologies, strategies, and applications towards achieving reliable, spontaneous, independent, safe, affordable, accessible, and efficient mobility options for all travelers. Quantified impacts support communication of technology benefits to future deployers and decision makers.
5. **Identify replicable solutions and disseminate lessons learned.** Determine which technologies, strategies, applications, and institutional partnerships demonstrate the most potential to address identified barriers to providing Complete Trips to all travelers in a variety of communities and built environments. Disseminate lessons learned from replicable solutions developed by deployment sites to catalyze additional deployment.

5. STATEMENT OF WORK

The following sections delineate the tasks and deliverables required in Phases 2 and 3.

The Recipient's Phase 1 final deliverables, as expressly approved in writing by the DOT under the Recipient's separately awarded Phase 1 contract, are hereby incorporated into this Statement of Work by reference as noted below. Incorporation by reference implies that agreements, processes, quantities, specifications, and other content identified in these named final DOT-approved deliverables are considered binding elements of the Phase 2 and 3 performance, and are incorporated by reference into this Statement of Work, except where specifically identified.

During the period of performance of this agreement, updates to previously DOT-approved Phase 1 deliverables will likely be necessary. If and when an update to a previously DOT-approved Phase 1 deliverable is required herein and/or deemed necessary by the parties, the updated version will be reviewed and, if acceptable, approved by DOT. When expressly approved by DOT in writing, the updated version shall supersede and replace the previous version and be considered officially

incorporated into this Statement of Work by reference. No separate formal agreement amendment is needed. The Recipient shall comply with the latest updated version, as expressly approved in writing by the DOT.

The Recipient shall perform the following Phase 2 and 3 activities based on the most recent DOT-accepted version of the final deliverables from the Phase 1 contract where applicable as identified below. In the event that a Phase 1 deliverable, or version update, has not been expressly approved in writing by the DOT, the Recipient shall not perform the relevant Phase 2 and 3 activities until such time as the Phase 1 deliverable, or version update, is expressly approved in writing by the DOT. Costs incurred to perform Phase 2 and 3 tasks, without receipt of written DOT approval of the relevant Phase 1 deliverables or updates, shall be deemed unallowable.

Phase 2 Tasks

- 2-A. Program Management
- 2-B. System Architecture and Design
- 2-C. Data Management Planning
- 2-D. Acquisition and Installation Planning
- 2-E. Software Development and Integration
- 2-F. Participant and Staff Training
- 2-G. System Test Planning
- 2-H. Installation and Operational Readiness Testing
- 2-I. Maintenance and Operations Planning
- 2-J. Stakeholder Outreach
- 2-K. Performance Measurement and Independent Evaluation Support
- 2-L. Participation in Standards Development

Phase 3 Tasks

- 3-A. Program Management
- 3-B. System Operations and Maintenance
- 3-C. Stakeholder Outreach
- 3-D. Performance Measurement and Independent Evaluation Support
- 3-E. Post-Deployment Transition Planning
- 3-F. Participation in Standards Development

Note 1: All final reports under this agreement will be made publicly available. All publications resulting from this program shall follow the ITS JPO publication guidelines¹

¹ <https://www.its.dot.gov/communications/pubsguidance.htm>

and comply with the current DOT Public Access Plan on date of award (currently Version 1.1²). In addition, data from these efforts are expected to be made widely available where appropriate, also in accordance with the DOT Public Access Plan.

Note 2: The Agreement Officer's Representative (AOR) will supply supporting materials and technical assistance to Recipients during Phases 2 and 3. Technical assistance includes templates for select Phase 2 and 3 deliverables.

Note 3: The Phase 2 activities, tasks, and deliverables described below to carry out Phase 2 do not include infrastructure improvement activities. Infrastructure expenses necessary to facilitate the integration of intelligent infrastructure, vehicle, and control technologies may be allowable if deemed necessary to successfully accomplish the scope of the demonstration.

PHASE 2 TASKS

2-A. PROGRAM MANAGEMENT

Deployment of a successful Complete Trip – ITS4US Deployment concept will require a disciplined approach to manage the execution of the work and make sure the team responsible for deployment delivers the highest quality products on time and within budget. Consistent processes and procedures should be used to ensure quality, timeliness, and cost control. The Recipient shall conduct effective program management activities to include:

- **Scope Management.** This includes ensuring that all required activities are performed and that only required activities are performed. The Recipient should have mechanisms in place for verifying and controlling the overall scope of the deployment.
- **Schedule Management.** This includes managing the timely execution of work activities. A Project Schedule should list all activities required to bring all required work to a successful completion. Successful schedule management should identify how the team will monitor the project schedule and manage changes after a baseline schedule has been approved. Schedule management includes identifying, analyzing, documenting, prioritizing, approving or rejecting, and publishing all schedule-related changes.

² <https://www.transportation.gov/mission/open/official-dot-public-access-plan-v11>

- **Communications Management.** This includes the systematic planning, implementing, monitoring, and revision of all the channels of communication within the project partners and with other stakeholders. For the purposes of the deployment program, a partner refers to an organization or individual on the deployment team. A stakeholder refers to an organization or individual potentially impacted by the deployment itself, regardless of whether they are team members (partners) or not. Communications management ensures effective internal team communications and governance methods, as well as communications with the DOT's Agreement Officer Representative (AOR). All communications shall meet stakeholder language and accessibility needs.
- **Cost Management.** This includes the process of planning and controlling the budget for the deployment. Effective cost management should ensure that any issues with funding surface quickly, before cost overruns can occur.
- **Quality Management.** This includes effectively managing the quality of the products produced, from planning to delivery. Quality management includes procedures to be followed to implement a quality program and provide the DOT with visibility into product quality (e.g., process and product evaluations, record keeping, nonconformance tracking, and reporting channels). Quality management addresses both Quality Control (QC) and Quality Assurance (QA) processes. QC is defined as the monitoring and controlling actions required during a project to ensure that a product – or performed service – adheres to a defined set of quality criteria. QA ensures that the appropriate quality planning and QC mechanisms are defined and utilized to prevent mistakes or defects.
- **Configuration Management.** This includes managing how items to be placed under configuration control are identified, when they are identified, and when they are placed into a configuration control process or system. Configuration management may include establishing a Configuration Control Board (CCB) and include procedures for handling proposed changes to items under configuration control, and the role of the DOT in configuration control.
- **Risk Management.** This includes identifying, prioritizing, and managing program risks in a timely and efficient manner. Risks that may impact the schedule, scope, or costs of activities performed under the program should be identified, documented, and tracked. Plans for mitigating risks should be identified and implemented.

Project Management Plan (PMP). The Recipient shall prepare a PMP that describes the activities required to perform the work, applying current PMBOK guidance³. The PMP shall explain the roles and responsibilities of all key individuals within the program/project team. At a minimum, the PMP shall contain a Scope Management Plan, a Schedule Management Plan, a Communications Management Plan, a Cost Management Plan, a Quality Management Plan, Configuration Management Plan, and a Risk Management Plan.

The Recipient shall deliver a draft PMP to the DOT. After receiving DOT comments and resolving them, the Recipient shall provide a revised version of the PMP and its related documents. During the course of the deployment, the Recipient may propose modifications to the PMP. Any such modifications shall go through the cycle of draft submission, DOT review and comment, comment resolution, and submission of a revised version. Routine Monthly Project Schedule updates, required as part of the Monthly Progress Reports per NOFO Section F.3, are not considered to be modifications to the PMP.

The PMP shall be accompanied by a detailed deployment Project Schedule, considered to be a logical component of the PMP, although it will be a physically separate electronic file. The Project Schedule shall list all activities required to bring all required work to a successful completion and shall contain – at a minimum – three levels of the Work Breakdown Structure (WBS). The Project Schedule should be submitted in Microsoft Project (2007 or later) format.

The Project Schedule shall be updated monthly (see NOFO Section F.3 below). The Project Schedule shall describe the following:

- Name of the work activity;
- Expected start and end dates;
- Name of the individual with the primary responsibility for accomplishing the work;
- Dependencies with other work activities in the Project Schedule;
- All deliverables, procurements, or milestones resulting from the work activity; and
- Percent Work Completed.

Phase 2 Kickoff Meeting. Within four weeks after the effective date of the award, representatives from the Recipient's deployment team shall attend a kick-off meeting with the DOT and its representatives to ensure that all parties have a common

³ Project Management Institute (2017), A Guide to the Project Management Body of Knowledge, 6th Ed. or later

understanding of the award requirements and expectations. The kickoff meeting is planned as an in-person meeting in Washington, DC. A virtual meeting may replace the in-person kick-off, subject to DOT approval.

Kickoff Meeting Attendance. The Recipient shall bring its key personnel identified in F.2.F, or their designees, plus one additional representative as necessary, to this meeting and the AOR will arrange the location, the agenda, and the list of other attendees.

Kick-off Meeting Travel Costs. Travel costs to attend the kick-off meeting shall be limited to a maximum of four individuals from the Recipient team unless otherwise approved by the Agreement Officer (AO). Specifically, the DOT requests attendance at the kick-off meeting by the three key personnel identified herein, or their designees, plus one grant/business manager or administrator. A virtual web conference will be made available for remote participation by additional Recipient team members.

Monthly Progress Reporting. The Recipient shall provide monthly reporting in accordance with instructions provided in Section F.3 Monthly Reporting (e.g., activity narrative, updated Lessons Learned Logbook, updated monthly project and task schedules, updated risk register), utilizing DOT templates that will be provided at Phase 2 kick-off. Note that monthly reporting is composed of two documents, Part I: Technical Progress and Status Summary, and Part II: Detailed Financial Summary (see Section F.3).

Lessons Learned Logbook (LLL). To meet overall program goals, deployment sites are expected to share insights and lessons learned with peers considering or actively deploying similar capabilities. This includes the accommodation of site visits and other activity/products conducted in Task 2-L Outreach. In addition, in this task the Recipient shall maintain a Lessons Learned Logbook (LLL) that captures for each lesson: a succinct title, relevant agreement task (e.g., Task 2-D), a summary of the issue identified, the realized/potential impacts, mitigating action(s) taken, and results identified (to date). The LLL shall be updated monthly, and a summary of new or updated entries incorporated into the Part I: Technical Progress and Status Summary in accordance with Section F.3 Monthly Reporting.

Bi-Weekly Deployment Teleconferences. The DOT requires the Recipient to organize and participate in a site-specific bi-weekly deployment coordination teleconference with the AOR and federal team members to review work in progress, identify issues and risks, and coordinate technical assistance. At a minimum, the site key personnel and other relevant team members as appropriate for topic discussions should participate in

these meetings.

Monthly All-Sites Coordination Teleconferences. To assist in coordination across sites and encourage collaboration among deployment sites, the Recipient shall have a minimum of one representative participate in a monthly all-site coordination teleconference to be conducted with all Phase 2 and Phase 3 Recipients.

Roundtable Participation. The Recipient shall have a minimum of one representative participate in up to five periodic roundtable meetings involving site representatives and federal staff organized around specific topics. The DOT envisions the three current Phase 1 roundtables (i.e., Technical, Outreach, and Performance Measures & Human Use Approval) continuing as appropriate to the nature of Phase 2. Up to two other roundtables (total) may be established on additional topics, as needed.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-A:

- Phase 1 Project Management Plan (Final).

Phase 2, Task 2-A Required Deliverables

- Phase 2 Kick-off Meeting
- Draft Project Management Plan (PMP)
- Revised PMP (as required)
- Monthly Progress Report Part I: Technical Progress and Status Summary
 - Includes: Project Milestone Schedule, Updated Task Schedules, Project and Task Detailed Risk Register, and Lessons Learned Logbook (LLL).
- Monthly Progress Report Part II: Detailed Financial Summary
- Participation in site-specific bi-weekly coordination teleconferences
- Participation monthly all-site coordination teleconferences
- Participation in periodic roundtable teleconferences

2-B. SYSTEM ARCHITECTURE AND DESIGN

This task area builds on systems engineering work conducted in Phase 1 and documented in key Phase 1 deliverables, including the Concept of Operations (ConOps), System Requirements Specification (SyRS), Systems Engineering Management Plan (SEMP), and Integrated Complete Trip Deployment Plan (ICTDP). The objective of this task is to first develop a well-structured architecture for the site deployment concept; and second to prepare a detailed design based on that architecture that embodies the deployment concept.

Systems Architecture Document (SAD). The Recipient shall develop and maintain a Systems Architecture Document (SAD), with a Standards Plan (appended to the SAD) and Interface Control Document section, to describe the architecture for systems associated with the deployment and associated standards that will be used.

IEEE Standard 42010-2011 (IEEE Recommended Practice for Software Architecture Descriptions) includes guidelines for format and content to develop a SAD, and should cover:

- Enterprise Architecture. Describes the relationships between organizations required to support the overall system architecture.
- Functional Architecture. Describes abstract functional elements (processes) and their logical interactions (data flows) that satisfy the system requirements.
- Physical Architecture. Describes physical objects (systems and devices) and their application objects as well as the high-level interfaces between those physical objects.
- Communications Architecture. Describes the communications protocols between application objects.

The National ITS Architecture⁴ is a mature architecture that provides a common framework for the ITS community to plan, define, and integrate ITS solutions. Recipients shall utilize the National ITS Architecture as well as published and in-development ITS standards as a part of site efforts to develop and deploy interoperable, extensible capabilities. Variances from the National ITS Architecture and ITS Standards shall be documented and subject to DOT review and approval.

The SAD shall include a Standards Plan and Interface Control Document that identifies the nature of required interfaces to other systems, which should be defined to utilize existing networking or other standards when available. In following the systems engineering process, the Recipient shall identify information exchange needs and/or use cases in the Interface Control Document section. To the extent that such exchanges are supported by standards, the Recipient should catalog applicable standards that will be used. Where new standards are needed, these needs should be fully documented in the Standards Plan. To support nationwide deployment of Complete Trip – ITS4US applications and capabilities, the Recipient shall use existing standards, architectures, and certification processes whenever viable, and document those cases where such use is not viable. To provide information required to refine ITS architecture and standards in support of nationwide deployment, the Recipient shall also

⁴ <https://www.standards.its.dot.gov/LearnAboutStandards/NationalITSArchitecture>

document their experiences and cooperate with architecture and standards developers to improve the quality of these products based on lessons learned in deployment (see Task 2-L).

After the delivery of the draft SAD, the Recipient will conduct a System Architecture Walkthrough (see IEEE Standard 1028-2008) with the AOR and federal team members in the Washington DC metro area (including a Walkthrough Workbook to structure and expedite the Walkthrough process) to demonstrate the completeness and technical soundness of the architectural approach. A minimum of two full working days shall be allocated to this Walkthrough. In response to DOT comments (both written comments provided prior to the Walkthrough and verbal comments provided during the Walkthrough), the Recipient will submit a revised SAD and an accompanying comment resolution report. Based on DOT review of the revised document, the Recipient will deliver a final SAD.

The System Architecture Walkthrough is planned as an in-person meeting in Washington, DC. A virtual meeting may replace the in-person walkthrough, subject to DOT approval.

Walkthrough Travel Note: Travel costs to attend the Walkthrough meeting shall be limited to a maximum of four individuals from the Recipient team unless otherwise approved by the AO. Specifically, the DOT requests attendance at the walkthrough by the three key personnel identified in F.2.F, or their designees, plus one additional representative, as needed. A webinar will be made available for remote participation by additional Recipient team members.

Systems Design Document (SDD). Based on the SyRS and the SAD, a system design is created describing the full scope of the system. Subsystems of the system are identified and decomposed further into components. Requirements are allocated to the system components, and interfaces are specified in detail. Detailed specifications are created for the hardware and software components to be developed, and final product selections are made for off-the-shelf components. IEEE Standard 1016-2009 (IEEE Recommended Practice for Software Design Descriptions) includes guidelines for format and content to develop a SDD.

After the delivery of the draft SDD, the Recipient will host and conduct a System Design Walkthrough (see IEEE Standard 1028-2008) within or near the deployment site (as well as a web conference or remote access capability) with the AOR, federal team members, and other key stakeholders that have participated in the ConOps and System Requirements walkthroughs, to demonstrate the completeness and technical

soundness of the system design (including a Walkthrough Workbook to structure and expedite the Walkthrough process). A minimum of two full working days shall be allocated to this Walkthrough. In response to DOT comments (both written comments provided prior to the Walkthrough and verbal comments provided during the Walkthrough), the Recipient will submit a revised SDD and an accompanying comment resolution report. Based on DOT review of the revised SDD, the Recipient will deliver a final SDD.

The System Design Walkthrough is planned as an in-person meeting within or near the deployment site(s). A virtual meeting may replace the in-person walkthrough, subject to DOT approval.

When the SDD is complete, the Recipient will deliver updated versions of Phase 1 deliverable, as needed. At a minimum, these updates will include: ConOps, SyRS, and ICTDP.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-B:

- Phase 1 Concept of Operations (Final)
- Phase 1 System Requirements Specification (Final)
- Phase 1 Integrated Complete Trip Deployment Plan (Final)

Phase 2, Task 2-B Required Deliverables

- Draft Systems Architecture Document (SAD)
- Systems Architecture Walkthrough and Workbook (Held in DC metro area)
- Revised SAD with Comment Resolution Report
- Final Systems Architecture Document
- Draft Systems Design Document (SDD)
- Systems Design Walkthrough and Workbook (Held at deployment site)
- Revised SDD with Comment Resolution Report
- Final Systems Design Document
- Updated Phase 1 Deliverables, at a minimum:
 - Revised Concept of Operations
 - Revised Systems Requirements
 - Revised Integrated Complete Trip Deployment Plan

2-C. DATA MANAGEMENT PLANNING

In this task, the Recipient shall develop a Data Privacy Plan (DPP), a Privacy Management Plan, and a Phase 2 Data Management Plan (DMP). Together, these plans document how data will be collected, integrated, managed, and disseminated during Phase 2 and Phase 3. This includes real-time and archived data (specifically identifying data to be publicly shared) in systems managed by the Recipient and its partners. Note that the DPP and DMP are deliverables under this agreement, while the Privacy Management Plan is not (see below). When developing the DPP and DMP, Recipients shall review the DOT's current Privacy Policy⁵ and Public Access Plan⁶ to ensure information in both reports is included where appropriate in the DPP and DMP.

Data Privacy Plan (DPP). Improper handling of Personally Identifiable Information (PII) or Sensitive Personally Identifiable Information (SPII) by a Recipient could have significant adverse impacts on the privacy of individuals. For this reason, DOT is committed to ensuring that the Recipient institutes sufficient data privacy controls to mitigate the risk of harm to individuals that would result in the improper handling or disclosure of the PII and SPII collected from individuals in connection with a DOT-funded deployment project.

The DPP should be consistent with the Phase 1 ConOps, the Phase 1 Human Use Approval Summary (HUAS), and Phase 1 DMP – any variances shall be identified and highlighted for DOT review. If DOT approves any variances, these variances shall be incorporated into updated Phase 1 documentation, as required.

The Recipient shall deliver a draft DPP to the DOT for review. The Recipient shall prepare a revised DPP in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT approval of the revised DPP and comment resolution report, the Recipient shall deliver a final DPP.

Privacy Management Plan. The DPP informs an overall Privacy Management Plan, prepared by the Recipient to be in accordance with relevant state and local laws for the deployment location(s). Note that the DPP should NOT address state and local laws, and the Privacy Management Plan details those state and local considerations and includes the plan to adhere to these state and local laws.

⁵ <https://www.transportation.gov/individuals/privacy/dot-privacy-policy>

⁶ <https://www.transportation.gov/mission/open/official-dot-public-access-plan-v11>

Note: The Privacy Management Plan is not a deliverable under this agreement. The Recipient is responsible only for submitting a Notice of Privacy Management Consistency (a one-page letter) to DOT that a Privacy Management Plan has been completed prior to the finalization of the Data Privacy Plan.

Phase 2 Data Management Plan (DMP). Building from the Phase 1 DMP, the Phase 2 DMP serves as an operational guide for managing data collectively as a strategic asset, and, subject to applicable privacy, security, and other safeguards, making data available to enable transparent system performance measurement, support independent evaluation, and fuel entrepreneurship, innovation, and economic development. The Phase 2 DMP shall document the flow of data from generation through its use to applications in the deployment, including, but not limited to:

- Data sources and destinations,
- Volume of data flow,
- Contents of data flow,
- Communications medium involved, and
- Long term storage plans.

The plan shall describe all data collection activities. Further, the plan shall assess the variety, volume, and velocity (frequency of collection) of deployment-related data that can be accommodated, in order to ensure the end-to-end delivery of data to all identified recipients/users/systems. The plan shall establish consistent and systematic quality control procedures.

Note: Automated data checking routines developed under this agreement shall be identified in the software development schedule. These routines should be included in the list of products/capabilities considered for release under an open-source license (see Task 2-E).

The Phase 2 DMP is intended to provide clear operational procedures consistent with data-related elements of multiple deliverables, including, but not limited to:

- Data Privacy Plan;
- Phase 1 ConOps, which includes a Privacy Operational Concept;
- Phase 1 Performance Measurement and Evaluation Support Plan (PMESP), which describes Field Data Collection, any data sharing associated with support to an Independent Evaluator, and includes a Data Sharing Framework (see below);
- Phase 1 SyRS, which includes Data Sharing Requirements; and

- Phase 1 HUAS, which includes feedback from an Institutional Research Board (IRB) related to participant data collection and use.

Data Sharing Framework (a sub-element of the DMP). Data identified for sharing (summarized in the Phase 1 ICTDP) require a practical Data Sharing Framework enabling the progress of data from collection to processing and documentation to public-facing repository. Data sharing is subject to the protection of intellectual property rights and personal privacy and must be handled securely.

Appropriately prepared system control, performance, and evaluation data, stripped of PII, are expected to be made available to the DOT and posted in timely fashion on public-facing resources, freely available to the public and research community. The DOT envisions that this data sharing capability will support the needs of ITS researchers and developers while encouraging nationwide deployment replicability by reducing costs and encouraging innovation. Hence, in the DMP, the Recipient shall identify all appropriate data and processes (including privacy-related processes) to be utilized in data processing within the Data Sharing Framework. Note that all data made available on public-facing resources must adhere to guidelines on preparation for submission and accompanying metadata determined by DOT (currently DOT Public Access Plan v1.1, see footnote #6).

Note that Task 2-C is related to data management planning only. Tasks related to the performance and execution of data collection and data sharing activities, in accordance with the approved DPP and DMP, are included under Tasks 2-H, 2-K, 3-B and 3-D of this Statement of Work.

The Recipient shall deliver a draft DMP to the DOT for review. The Recipient shall prepare a revised DMP in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT review of the revised DMP, the Recipient will deliver a final DMP.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-C:

- Phase 1 Concept of Operations (Final)
- Phase 1 Performance Measurement and Evaluation Support Plan (Final)
- Phase 1 System Requirement Specification (Final)
- Phase 1 Human Use Approval Summary (Final)
- Phase 1 Data Management Plan (Final)

Phase 2, Task 2-C Required Deliverables

- Draft Data Privacy Plan (DPP)
- Revised DPP with Comment Resolution Report
- Final Data Privacy Plan (DPP)
- Notice of Privacy Management Consistency
- Draft Phase 2 Data Management Plan (DMP)
- Revised Phase 2 DMP with Comment Resolution Report
- Final Phase 2 Data Management Plan (DMP)

2-D. ACQUISITION AND INSTALLATION PLANNING

This task area covers planning for the acquisition, configuration, and installation of all in-vehicle, roadside, mobile device, center, and other equipment, software and supporting capabilities required to design, build, integrate, and test the designed system. The phrase “other equipment, software, and supporting capabilities” includes Commercial Off-the-Shelf (COTS) and Modifiable Off-the-Shelf (MOTS) software capabilities obtained from vendors and not explicitly covered under partner-developed Task 2-E (Software Development and Integration).

Comprehensive Acquisition Plan (CAP). The Recipient shall develop a Comprehensive Acquisition Plan (CAP) that identifies the type and number of devices, equipment, and software-based capabilities to be acquired. The Plan shall have one section for vehicles and in-vehicle equipment, one for roadside equipment, one for mobile devices, one for operations/management center equipment/capabilities, and one for other equipment and supporting capabilities. The CAP shall provide an overview of the proposed acquisition approach that includes an assessment of time-to-procure relative to the overall deployment schedule. The CAP shall include a plan to equitably engage and inform prospective vendors over time in case of changes to requirements, quantities, and delivery timelines.

In addition, for each identified type of equipment, the CAP shall include, at a minimum:

- A description of the item,
- Reference(s) to relevant requirements and specifications derived from the SDD,
- Note any/all certification requirements,
- Describe the method of acquisition, and
- Potential vendors/suppliers.

The DOT understands that there could be substantially different acquisition schedules depending on the nature and type of equipment/capability being acquired. The CAP is

intended to document the process and provide assurance that this process is systematic, orderly, and well-documented. Individual item/capability acquisition is not subject to DOT approval prior to acquisition.

The Recipient shall deliver a draft CAP to the DOT for review. The Recipient shall prepare a revised CAP in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT review of the revised CAP, the Recipient shall deliver a final CAP.

Comprehensive Installation Plan (CIP). The Recipient shall develop a Comprehensive Installation Plan (CIP) that incorporates the CAP and further identifies the types and number of equipment required to be configured and installed. Note that the installation of infrastructure related elements must adhere and be consistent with state and local standards and installation approval procedures. The CIP shall have one section for vehicles and in-vehicle equipment, one for roadside equipment, one for mobile devices, one for management center equipment/capabilities, and one for software and other supporting capabilities. The CIP shall provide an overview of the supplier base and procurement method(s), a high-level plan for inventory and configuration management, a high-level initial installation schedule, and one or more high-level installation plan(s).

In addition, for each identified type of equipment, the CIP shall identify:

- Supplier(s),
- Inventory control method(s),
- Required configuration or pre-installation modifications,
- Pre- and post-installation inspection procedures,
- Detailed installation procedures,
- QA/QC and maintenance processes (with identified responsible parties),
- A preliminary, high-level installation schedule,
- Hardware/software configuration control processes, and
- Spare parts/warranty contingency plans.

The Recipient shall deliver a draft CIP to the DOT for review. The Recipient shall prepare a revised CIP in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT review of the revised CIP, the Recipient will deliver a final CIP.

Phase 2, Task 2-D Required Deliverables

- Draft Comprehensive Acquisition Plan (CAP)
- Revised CAP with Comment Resolution Report

- Final Comprehensive Acquisition Plan
- Draft Comprehensive Installation Plan (CIP)
- Revised CIP with Comment Resolution Report
- Final Comprehensive Installation Plan

2-E. SOFTWARE DEVELOPMENT AND INTEGRATION

This task covers all non-COTS/MOTS software development efforts conducted under this NOFO to support or create applications, integrate deployment functions, or enable testing at the system (or sub-system) level. Note that COTS and MOTS capabilities obtained from vendors are tracked separately under Task 2-D (Acquisition and Installation Planning). When considered together, all required software development for the deployment should be reflected in Task 2-D and 2-E. This task specifically addresses non-COTS/MOTS software development as well as all software integration activity (COTS/MOTS and non-COTS/MOTS). Task 2-E includes the documentation of all technical, cost, and schedule considerations and other risks associated with software integration. Note that Task 2-E includes both the planning and execution of software development activity in Phase 2.

While some Task 2-E software development activities may have to wait until the system design work is complete, some activity may be initiated earlier in Phase 2. Given uncertainties in schedule and cost estimation associated with software development, managing these software activities is a critical action to mitigate risks with respect to overall deployment technical, schedule, and cost management.

Software Development Schedule (SDS). The Recipient shall prepare an initial Software Development Schedule (SDS) that identifies the work breakdown structure (noting all dependencies among activities) required to make all Task 2-E capabilities deployment-ready (see Section F.3). This includes, but is not limited to the following software capabilities:

- the development/enhancement of individual applications or modules to meet deployment-specific needs;
- the integration of applications, services, and technologies in a synergistic collection (e.g., “bundle”),
- the management of data, safety, performance measurement, or other requirements;
- planning for user testing and engagement;
- interfacing (as required) with security and credential/user authentication systems;
- testing at sub-system or system levels;
- interfacing with existing legacy systems;

- the development of software environments and architectures;
- the adaptation and application of Continuous Integration (CI) systems (if any) to automate software releases and system deployment;
- optimization of code and refactoring; and
- development of documentation.

The initial SDS shall include a software testing schedule (as an appendix) and report progress against these tests as an element of updated SDS submittals. The software testing is a component of and is consistent with the overall system testing. The Recipient shall deliver an initial draft SDS to the AOR for review and approval. The Recipient shall provide progress as a minimum monthly update to the SDS.

Monthly SDS Update. The Recipient shall prepare monthly updates to the SDS in response to DOT comments on format and content, as well as to document progress against plan and track risks/issues (see Section F.3). The updated SDS will be accompanied by a concise summary of development activities underway, progress made since the last update, and any/all technical issues/risks with any/all mitigation actions taken since the last update. Monthly schedule and risk updates are expected to be delivered from the time that this task is initiated until the end of Phase 2.

Open-Source Software and Supporting Documentation. Per the SEMP and ICTDP documents, identified open source software and supporting documentation to be provided in this task shall be identified as deliverables/milestones within the SDS. Publicly posting all identified open source code and supporting documentation is a deliverable in this task.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-E:

- Phase 1 Systems Engineering Management Plan (Final)
- Phase 1 System Requirements Specification (SyRS) Document (Final)
- Phase 1 Integrated Complete Trip Deployment Plan (Final)

Phase 2, Task 2-E Required Deliverables

- Initial Software Development Schedule (SDS)
- SDS Update with Progress/Risk Summary
 - Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting
- Open Source Software and Supporting Documentation (per the SDS)

2-F. PARTICIPANT AND STAFF TRAINING

In this task, relevant participants, operators, installers, maintenance staff, and other personnel are trained to install, interact with, operate, maintain, and/or repair the deployed system. This activity is guided by the Participant Training and Stakeholder Education Plan (PTSEP) prepared in Phase 1. This includes the development and/or acquisition of recruitment and training materials, recruiting, and the delivery of training to all required personnel – and approval, as required per the Phase 1 HUAS. Some training activities will be dependent on the completion of the system design and/or installation planning activities; others will not be dependent.

Some training activities will be related to applications and some to core functions. An update to the PTSEP may be required as an initial step in this task.

Note: Recruitment *cannot be initiated* without human use approval obtained through an IRB per the approved Phase 1 HUAS. Per the processes identified in the HUAS, the Recipient will submit documentation assessing to the completion of this requirement in this task prior to the initiation of any recruitment activity.

Training Implementation Schedule (TIS). In this task, a work breakdown structure (see Section F.3) of activities required to implement the PTSEP in Phase 2 is created and documented in a Training Implementation Schedule (TIS). The Recipient shall deliver an initial draft TIS to the AOR for review and approval. The Recipient shall provide progress as a (minimum) monthly update to the TIS.

Monthly TIS Update. The Recipient shall prepare monthly updates to the TIS in response to DOT comments on format and content, as well as to document progress against plan, and track risks/issues (see Section F.3). The updated TIS shall include a concise summary of activities underway, progress made since the last update, and any technical issues/risks with mitigation actions taken since the last update (see Section F.3). Monthly schedule and risk updates are to be delivered from the time that this task is initiated until the end of Phase 2.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-F:

- Phase 1 Participant Training and Stakeholder Education Plan (Final)
- Phase 1 Human Use Approval Summary (Final)

Phase 2, Task 2-F Required Deliverables

- Initial Training Implementation Schedule (TIS)
- TIS Update with Progress/Risk Summary

- Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting
- Training Materials (Initial and Updates, as specified in the PTSEP and TIS)
- Human Use Approval Confirmation Materials (per the HUAS)

2-G. SYSTEM TEST PLANNING

Operational readiness is established with a comprehensive set of *tests* and supporting *demonstrations* to be designed and conducted by the Recipient. In this task, the Recipient creates a comprehensive Operational Readiness Plan (ORP) that describes both tests and demonstrations. When all testing is satisfactorily completed and all demonstrations are suitably successful, the deployment can be considered ready to move into an operational phase (*see Paragraph 6, Approval to Proceed to Phase 3.*). Results from operational readiness tests shall be documented and reported to DOT in Task 2-H.

Testing. The Recipient will plan a set of relevant tests to verify that the system performs according to the documented System Requirements. These tests are documented in the System Test Plan (STP). Additional tests may be needed to support the assessment of operational readiness. These tests are documented in the Operational Readiness Test Plan (ORTP), a sub-element of the ORP.

Demonstrations. The Recipient will plan a set of demonstrations to show that the system performs as expected in key use cases/scenarios. Demonstrations are documented in the Operational Readiness Demonstration Plan (ORDP), a sub-element of the ORP. Demonstrations are differentiated from tests in that they are intended to exhibit a set of selected integrated, end-to-end system capabilities central to the deployment concept of operations (e.g., key use cases). Select demonstrations may be conducted as a live, real-time activity for the AOR and federal team wherein success and failure of the demonstration are directly observable.

System Test Plan (STP). In this task, the Recipient shall document their approach to verifying their system meets its requirements and validate that it meets its user needs within a System Test Plan (STP). The STP shall define their system test strategy, describing the flow of testing from Unit Testing to Subsystem, Integration, and full System Acceptance Testing. Each of these phases of testing shall have a high-level overview of the types of testing that will be accomplished in each phase. The types of testing would include, but are not limited to, functional testing, performance testing, security testing, and end user testing/demonstrations. Each phase shall also include a schedule showing when these phases will be accomplished and any interdependencies

between activities in each phase. The Recipient will also document what specific test plans, test cases, and test procedures will be documented for each test phase and where that documentation will be maintained. The STP shall discuss the overall test processes within the program including how test failures are handled; how regression testing is accomplished; how deficiencies/defects are handled and reported; and how the test results, in this case the results from Unit, Subsystem, Integration and System Acceptance testing, and progress against the test schedule are reported. Finally, the STP shall include a Requirements Traceability Matrix (RTM) that shows the traceability between every system requirement, its test verification method (e.g., Inspection, Demonstration, Analysis, or Test), and the specific test case(s) that it will be verified in.

Operational Readiness Concept Briefing. The Recipient shall develop an Operational Readiness Concept Briefing, which outlines the aspects of the deployment to be considered in the assessment of operational readiness and later documented in the ORP. This includes comprehensive systems engineering considerations (i.e., unit, subsystem, integration, and system acceptance testing identified in the STP) as well as assessments of whether the deployment can operate safely and securely, whether staff and participants are suitably trained, human use approval has been obtained for all deployment participants, institutional and financial arrangements have been finalized, and whether the impact of the deployment can be discerned, measured, and reported. The briefing will be held in the Washington, DC metro area (also available for remote participants through a web conferencing capability). A (completely) virtual briefing may replace the in-person briefing, subject to DOT approval. The briefing shall include a preliminary list of proposed demonstrations. Demonstrations must cover, at a minimum:

- Key use cases illustrating the capability of the system to perform in accordance with the Phase 1 ConOps,
- Safety-focused demonstration elements,
- Privacy-focused demonstration elements,
- Performance measurement and evaluation support demonstration elements
- Institutional coordination and successful execution of governance frameworks, management processes, and financial arrangements, and
- Maintenance-oriented demonstration elements.

Operational Readiness Concept Briefing Note: Travel costs to attend the briefing shall be limited to a maximum of four individuals from the Recipient team unless otherwise approved by the AO. Specifically, the DOT requests attendance at the briefing by the three key personnel identified in F.2.F, or their designees, plus one additional representative as necessary. Web conferencing will be made available for remote participation by additional Recipient team members.

Operational Readiness Plan (ORP). The Recipient shall incorporate discussion and/or written comments from the readiness concept briefing in a draft ORP, with one section regarding tests (ORTP) and a second section describing demonstrations (ORDP).

The ORTP will incorporate (at a minimum) the following elements for each test:

- Test Descriptions. Test Descriptions shall include written descriptions of the individual verification and validation processes that will occur as part of the effort to ensure that the system was built correctly and that the correct system was built. Test descriptions shall contain links to documented System Requirement(s). The document should include a requirements-to-test procedure matrix that shows the test coverage relationship among the tests and the requirements. Every requirement shall have at least one test case associated with it and each test case should have at least one requirement associated with it when both System Test Plan and ORTP are considered.
- Test Cases. Each test case shall include a set of test inputs, execution conditions, and expected results developed for a particular objective, such as to exercise a particular path within a system or a software application or to verify compliance with a specific requirement or set of requirements. Note that test cases shall incorporate targeted underserved populations and represent individuals with different abilities and needs.
- Test Procedures. Test procedures shall detail exactly how one verifies and validates that the component of the system examined actually functions as intended and as desired. If test data are going to be used as part of the verification and validation process in this step, the test procedures shall also detail how one will determine that the system actually performed the correct transformations on the data entered. Verification can use inspection, test, demonstration, and analysis but must be identified in each test.
- Test Data. Test Data shall include scripts used to execute software operations, data that must be entered by someone as part of the process of verification and validation of the system and its component integration, or a description of what system-generated data will flow through different components of the system to accomplish a system function.
- Test Results. Documents that describe the results of each test conducted. The ORTP will also describe how test results will be summarized and documented across all tests and delivered to DOT in Task 2-H.
- Test Failure Remediation. This section describes the actions to be taken in the event of a failed test.

- Schedule. This section shall describe the schedule for conducting the operational readiness tests and any interdependencies between the different test cases.

The ORDP will incorporate (at a minimum) the following elements (adapted for the aspect of deployment readiness testing) for each demonstration:

- Demonstration Descriptions. The descriptions identify the objective, general location, participants, equipment, and actions to be taken within the demonstration to illustrate the successful deployment of key use cases.
- Demonstration Procedures. Procedures describe the sequence of events expected to be demonstrated and observable validation criteria associated with the overall purpose of the demonstration.
- Demonstration Data. Demonstration data are collected before, during, or after the demonstration to support the observable demonstration validation criteria related to demonstration success (e.g., pass or fail).
- Demonstration Results. Documents that capture the results of each demonstration conducted. The ORDP will also describe how demonstration results will be summarized and documented across all demonstrations and delivered to DOT in Task 2-H.

Operational Readiness Plan Walkthrough. After the delivery of the draft ORP, the Recipient shall conduct an Operational Readiness Plan Walkthrough in the Washington, DC metro area to demonstrate the completeness and technical soundness of the plan (including preparing a Walkthrough Workbook to structure and expedite the Walkthrough process). A (completely) virtual meeting may replace the in-person meeting, subject to DOT approval.

In response to DOT comments (both written comments provided prior to the Walkthrough and verbal comments provided during the Walkthrough), the Recipient will submit a revised ORP and an accompanying comment resolution report. Based on DOT review of the revised ORP, the Recipient will deliver a final ORP.

Walkthrough Travel Note: Travel costs to attend the Walkthrough shall be limited to a maximum of four individuals from the Recipient team unless otherwise approved by the AO. Specifically, the DOT requests attendance at the walkthrough meeting by the three key personnel identified in F.2.F, or their designees, plus one additional representative as necessary. A web conference will be made available by DOT for remote participation by additional Recipient team members.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-G:

- Phase 1 Concept of Operations (Final),
- Phase 1 Safety Management Plan (Final),
- Phase 1 System Requirements Document (Final),
- Phase 1 Performance Measurement and Evaluation Support Plan, and
- Phase 1 Institutional, Partnership, and Financial Plan (Final).

Phase 2, Task 2-G Required Deliverables

- Draft System Test Plan
- Revised System Test Plan with Comment Resolution Report
- Final System Test Plan
- Operational Readiness Concept Briefing (Held in DC metro area)
- Draft Operational Readiness Plan (ORP)
- ORP Walkthrough and Workbook (Held in DC metro area)
- Revised ORP with Comment Resolution Report
- Final Operational Readiness Plan (ORP)

2-H. INSTALLATION AND OPERATIONAL READINESS TESTING

The Recipient shall install equipment according to the CIP in Task 2-D and operational readiness is established according to the ORP in Task 2-G.

Installation and Operational Readiness Schedule (IORS). In this task, a work breakdown structure (see Section F.3) of activities (and dependencies) required to implement the CIP and ORP is created and documented in an initial Installation and Operational Readiness Schedule (IORS). The initial draft IORS shall be submitted to the AOR for review and approval. The Recipient shall provide progress as a (minimum) monthly update to the IORS.

Monthly IORS Update. The Recipient shall prepare monthly updates to the IORS in response to DOT comments on format and content, as well as to document progress against plan, and track risks/issues (see Section F.3). The updated IORS shall include a concise summary of activities underway, progress made since the last update, and any/all technical issues/risks with any/all mitigation actions taken since the last update (see Section F.3). Monthly schedule and risk updates are expected to be delivered from the time that this task is initiated until the end of Phase 2.

As a part of the monthly IORS update, the Recipient shall include an appendix or within

the schedule tab that reports the numbers of participants, vehicles, mobile devices, service area dimensions, roadside/wayside infrastructure elements, and other relevant countable deployment elements envisioned as a part of *at-scale* deployment (as documented in the Phase 1 ICTDP). *At-scale* here refers to the scope of the deployment when fully deployed and operational – levels intended to be maintained as a part of a sustained deployment for a minimum of five years beyond the end of Phase 3.

System Test Results Summary (STRS). Prior to start of Operational Readiness Testing, the Recipient shall deliver the System Test Results Summary (STRS). The STRS shall provide the summary of test results from the testing outlined in the STP, which should include the pass/fail status of the tests conducted in each phase (Unit, Subsystem, Integration, and System Acceptance), number of defects found, and number of defects resolved. The STRS shall also note any open defects, the severity/impact of those defects on the system, and the timeframe for when they will be resolved.

Test Results Summary Documentation and Operational Readiness Demonstrations. After completion of the Operational Readiness Tests, the test results will be documented and reported according to the processes identified in the ORP. Demonstrations will be scheduled in conjunction with the AOR and key federal staff. Demonstrations will be conducted and documented per the processes identified in the ORP.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-H:

- Phase 1 Integrated Complete Trip Deployment Plan (Final)

Phase 2, Task 2-H Required Deliverables

- Installation and Operational Readiness Testing Schedule (IORS)
- IORS Updated with Progress/Risk Summary
 - Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting
- System Test Results Summary (STRS) (per the STS)
- Test Results Summary Documentation (per the ORP)
- Operational Readiness Demonstrations (per the ORP)

2-I. MAINTENANCE AND OPERATIONS PLANNING

This task area covers planning for the operations and maintenance of all in-vehicle, roadside, mobile device, center, and other equipment and supporting capabilities required in the deployed system.

Comprehensive Maintenance and Operations Plan (CMOP). The Recipient shall develop a Comprehensive Maintenance and Operations Plan (CMOP) that identifies the types and number of equipment required to be maintained. Further, this document shall summarize key operational methods and procedures that ensure safe and efficient operations in Phase 3, incorporating as required, elements from the Phase 1 Safety Management Plan. The CMOP shall have one section for operations and one section for maintenance. The maintenance section shall be further divided into sub-sections as applicable, one for vehicles and in-vehicle equipment, one for roadside equipment, one for mobile devices, one for management center equipment, and one for other equipment and supporting capabilities. The CMOP shall provide an overview of the proposed operational methods and processes, a high-level maintenance approach, as well as a high-level plan for inventory and configuration management. The CMOP shall include a description of the required elements of a maintenance-focused demonstration to be included as part of the ORP (Task 2-G).

In addition, for each identified type of equipment, the CMOP shall identify:

- Routine maintenance requirements/schedules,
- Inspection procedures,
- Maintenance/replacement procedures and anticipated timeline (and responsible entities),
- QA/QC processes,
- Hardware/software configuration control processes,
- Recall processes, and
- Spare parts/warranty contingency plans.

The Recipient shall deliver a draft CMOP to the DOT for review. The Recipient shall prepare a revised CMOP in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT review of the revised CMOP, the Recipient will deliver a final CMOP.

Phase 2, Task 2-I Required Deliverables

- Draft Comprehensive Maintenance and Operations Plan (CMOP)
- Revised CMOP with Comment Resolution Report
- Final CMOP

2-J. STAKEHOLDER OUTREACH

Phase 2 Outreach Plan. At the start of this task, the Recipient will revise the Phase 1 Outreach Plan and update (as needed) throughout Phase 2. Stakeholder Outreach activity in Phase 2 and 3 is guided by the Phase 2 Outreach Plan. This includes, for example, the development and/or acquisition of awareness campaigns, web/social media content, trade show and conference materials, and other supporting materials intended to inform and engage stakeholders and the general public. In addition, this task is intended to cover all outreach events held for stakeholders in Phase 2 at the deployment site and the accommodation of requests for site visits by the media, researchers, and other visitors. Some outreach activities will be dependent on progress made in deploying the system; others will not be dependent.

The Recipient shall deliver a draft Phase 2 Outreach Plan to the DOT for review. The Recipient shall prepare a revised Phase 2 Outreach Plan in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT review of the revised Phase 2 Outreach Plan, the Recipient will deliver a final Phase 2 Outreach Plan.

Outreach Implementation Schedule (OIS). Based on the revised/updated Phase 2 Outreach Plan, the Recipient shall create and document in an Outreach Implementation Schedule (OIS), a work breakdown structure (see Section F.3) of activities required to implement the Phase 2 Outreach Plan. The Recipient shall deliver an initial draft OIS to the AOR for review and approval. The Recipient shall provide progress as a (minimum) monthly update to the OIS.

Monthly OIS Update. The Recipient shall prepare monthly updates to the OIS in response to DOT comments on format and content, as well as to document progress against plan, and track risks/issues (see Section F.3). The updated OIS will include a concise summary of activities underway, progress made since the last update, and technical issues/risks with mitigation actions taken since the last update. Monthly schedule and risk updates are expected to be delivered from the time that this task is initiated until the end of Phase 2.

Travel Costs Note: The Recipient shall not incur travel costs under this task without the written prior approval from the AO. The Recipient shall document planned and conducted travel in the Phase 2 Outreach Plan.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-J:

- Phase 1 Outreach Plan (Final)

Phase 2, Task 2-J Required Deliverables

- Draft Phase 2 Outreach Plan
- Revised Phase 2 Outreach Plan with Comment Resolution Report
- Final Phase 2 Outreach Plan
- Initial Outreach Implementation Schedule (OIS)
- OIS Updated with Progress/Risk Summary
 - Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting
- Outreach Materials (as specified in the Phase 2 Outreach Plan and OIS)

2-K. PERFORMANCE MEASUREMENT AND INDEPENDENT EVALUATION SUPPORT

In this task, the Recipient collects, processes, and distributes data and performance reports according to the Phase 1 PMESP and to support an Independent Evaluation effort. The collection, processing, quality control, and transfer of data from the deployment site in support of performance measurement and evaluation is documented within the current DMP (itself consistent with the PMESP).

The focus of activity in this Phase 2 task relates to establishing working end-to-end data collection and processing capabilities, and the collection and processing of baseline (“BEFORE”) data to support performance measurement activities. As appropriate and directed by DOT, the Recipient shall coordinate with the Independent Evaluator and facilitate independent evaluator access to Recipient and stakeholders.

In addition, in this task, the Recipient will execute the activities as outlined in the PMESP, including, but not limited to, identifying:

- Methods and records used to track the state of active applications and services in the operational phase, including operational status, geographic coverage, application versions active (or deactivated), and other contextual information and operational condition descriptions relevant to system performance and participant outcomes;
- Performance measure calculation procedures; and
- Data related to the mitigation of confounding factors, including factors tracked, sources of available information utilized to track these factors, and mitigation approaches (if any) utilized by the sites.

Performance Measurement and Evaluation Support Schedule (PMESS). The Recipient shall prepare a PMESS that includes a work breakdown structure (see Section F.3) of activities (and dependencies) required to implement the PMESP (and DMP) for the specific purposes of the performance measurement and evaluation support. In particular, the PMESS will identify milestones, performance summary reports, and pre-deployment (“BEFORE”) data for coordination with DOT. Note that consistent performance reporting in Phase 2 is critical in measuring and assessing the impacts of the deployment prior to making the system operational in Phase 3.

The Recipient shall deliver an initial draft PMESS to the AOR for review and approval. The Recipient shall provide progress as a (minimum) monthly update to the PMESS.

Monthly PMESS Update. The Recipient shall prepare monthly updates to the PMESS in response to DOT comments on format and content, as well as to document progress against plan and track risks/issues (see Section F.3). The updated PMESS will include a concise summary of activities underway, progress made since the last update, and data impact log to record any changes that impact data needed for performance measurement effort. Monthly schedule and risk updates are expected to be delivered from the time that this task is initiated until the end of Phase 2.

Phase 1 Deliverables Updates. Periodically (but no less than once) the Recipient shall update the PMESP in Phase 2. The Recipient shall document within the updated PMESP any/all analytical models and algorithmic methodologies utilized in performance measure calculation. In addition, the Recipient shall update the HUAS, as needed, according to the PMESP update and with IRB approval of changes. Any updates to the PMESP that impact the DMP shall be addressed in Task 2-C.

Performance Measurement Materials. The Recipient shall deliver the products (e.g., Pre-Deployment Performance Data and System Performance Reports) identified in the PMESP and other supporting information on or before delivery dates identified in the PMESS.

The following Phase 1 contract deliverables are hereby incorporated by reference into this Statement of Work Task 2-K:

- Phase 1 Performance Management and Evaluation Support Plan
- Phase 1 Human Use Approval Summary
- Phase 1 Data Management Plan (DMP)

Phase 2, Task 2-K Required Deliverables

- Initial Performance Measurement and Evaluation Support Schedule (PMESS)
- PMESS Updated with Progress/Risk Summary (monthly)
 - Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting
- Updated PMESP (minimum one update)
- Revised Human Use Approval Summary (updated as necessary with IRB approval)
- Performance Measurement Materials identified in the PMESP and PMESS (e.g., Pre-Deployment Performance Data, System Performance Reports) and other supporting information.

2-L. PARTICIPATION IN STANDARDS DEVELOPMENT

In this task, the Recipient shall assist the DOT in improving and expanding ITS architecture and standards to support ITS deployments based on experiences and lessons learned as a part of the deployment activity. Such support includes participation in relevant standards development activities including participation at select Standards Development Organization (SDO) working group/committee meetings, providing input to the SDO working group in the form of technical information (e.g., objectives, user needs, data requirements, and review and contribution to relevant standards documentation. As directed by the AOR, the Recipient shall provide appropriate input to expand, correct or otherwise improve ITS architecture(s) based on experiences in this effort.

Relevant standards are identified in the Standards Plan element of the System Architecture Document (SAD) in Task 2-B. The Standards Plan catalogs applicable standards that will be used, where changes to existing standards should be considered, and where new standards may be required. In this task, the Recipient documents their experiences to improve current standards and/or influence SDOs in one or more Standards Technical Memoranda organized in a format appropriate as input to SDO working groups/committees.

Participate in SDO Working Group/Committee Meetings (as directed by the AOR). In a case where the AOR determines that the significance of the content in relevant Technical Memoranda is essential to expedite replicability, the Recipient will make available an appropriate subject matter expert (SME) from their existing team to participate in SDO working group and/or technical committee meetings and provide/edit content of applicable standards. The SME is expected to participate in technical discussions and provide program needs, use cases, and requirements to the

appropriate SDOs. The Recipient will also be responsible for reviewing/editing standards documentation relevant to the deployment program as it is developed and balloted within the SDO process.

Travel Costs Note: The Recipient shall not incur travel costs under this task without the written prior approval from the AO. The Recipient shall document planned and conducted travel in the Phase 2 Outreach Plan (see Task 2-J).

Support ITS Architecture Evolution. To the extent that during execution of the deployment effort opportunities to expand or improve DOT architectures or tools are identified, the Recipient will provide appropriate feedback to the Government and/or Government-designated architecture contractors.

Phase 2, Task 2-L Required Deliverables

- SDO-specific Technical Memoranda (as defined in the Standards Plan within the SAD)
- Participation in SDO working group or committee meetings/activities (as required)

PHASE 3: MAINTAIN AND OPERATE

NOTE: The Recipient shall not perform Phase 3 activities without the express written approval of the Agreement Officer (AO). See Paragraph 6, Approval to Proceed to Phase 3.

3-A. PROGRAM MANAGEMENT

This task is a continuation of the Phase 2 Program Management activity, with the same objectives, activities, and scope. See Task 2-A and Section F.3 for details.

Kick-off Meeting Note: The kick-off meeting may occur at the DOT in Washington DC, or at Recipient site. If held in Washington DC, travel costs to attend the kick-off meeting shall be limited to a maximum of four individuals from the Recipient team unless otherwise approved by the AO. Specifically, the DOT requests attendance at the kick-off meeting by the three key personnel identified in F.2.F, or their designees, plus one grant/business manager or administrator. A webinar will be made available for remote participation by additional Recipient team members. A (completely) virtual meeting may replace the in-person kick-off, subject to DOT approval.

Phase 3, Task 3-A Required Deliverables

- Phase 3 Kick-off Meeting
- Project Management Plan (PMP)
- Revised PMP (as required)
- Monthly Progress Report Part I: Technical Progress and Status Summary
 - Includes: Project Milestone Schedule, Updated Task Schedules, Project and Task Detailed Risk Register, and Lessons Learned Logbook (LLL).
- Monthly Progress Report Part II: Detailed Financial Summary
- Participation in site-specific bi-weekly coordination teleconferences
- Participation in monthly all-site coordination teleconferences
- Participation in periodic roundtable teleconferences

3-B. SYSTEM OPERATIONS AND MAINTENANCE

In this task, the Recipient shall operate and maintain the system according to the Comprehensive Maintenance and Operations Plan (CMOP).

System Operations and Maintenance Schedule (SOMS). In this task, system installation and operational status are documented by the Recipient in a System Operations and Maintenance Schedule (SOMS). Any/all activations or implementations of plans identified in the Phase 1 SMP shall be included and highlighted in the SOMS.

The Recipient shall deliver an initial draft SOMS to the AOR for review and approval. Progress shall be provided by the Recipient as a monthly update to the SOMS.

Monthly SOMS Update. The Recipient shall prepare monthly updates to the SOMS in response to DOT comments on format and content, as well as to document progress against plan and track risks/issues (see Section F.3). The updated SOMS will include a concise summary of activities underway, progress made since the last update, and any/all technical issues/risks/incidents with any/all mitigation actions taken since the last update.

As a part of the monthly SOMS update, the Recipient shall include an appendix or within the schedule tab that reports the number of participants, vehicles, mobile devices, service area dimensions, roadside/wayside infrastructure elements, and other relevant countable deployment elements envisioned as a part of *at-scale* deployment. *At-scale* here refers to the scope of the deployment when fully deployed and operational – levels intended to be maintained as a part of a sustained deployment for a minimum of five years beyond the end of Phase 3.

Monthly schedule and risk updates are expected to be delivered from the time that this task is initiated until the end of Phase 3.

Phase 3, Task 3-B Required Deliverables

- Initial System Operations and Maintenance Schedule (SOMS)
- Updated SOMS with Progress/Risk Summary (monthly)
 - Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting

3-C. STAKEHOLDER OUTREACH

The Recipient shall conduct Stakeholder Outreach in Phase 3 as described in the Phase 2 Outreach Plan. This includes, for example, the development and/or acquisition of outreach materials, web/social media content, trade show and conference materials, and other supporting materials intended to inform and engage stakeholders and the general public. Outreach activities in Phase 3 will include an Operational Capability Showcase no later than the first 12 months of Phase 3. This is not a structured demonstration but is intended as a media event to show the capabilities, intent, and value of the deployment.

Outreach Implementation Schedule (OIS). In this task, a work breakdown structure (see Section F.3) of activities required to implement the Phase 2 Outreach Plan in Phase 3 is created and documented by the Recipient in an Outreach Implementation Schedule (OIS). As in Phase 2, activity in this task includes collaboration with domestic and international sites planning for or deploying similar technologies.

The Recipient shall deliver an initial draft OIS to the AOR for review and approval. Progress should be provided by the Recipient as a (minimum) monthly update to the OIS.

Monthly OIS Update. The Recipient shall prepare monthly updates to the OIS in response to DOT comments on format and content, as well as to document progress against plan and track risks/issues (see Section F.3). The updated OIS will be accompanied by a concise summary of activities underway, progress made since the last update, and any/all technical issues/risks with any/all mitigation actions taken since the last update.

Operational Capability Showcase Plan (OCSP). The Recipient will prepare a draft Operational Capability Showcase Plan (OCSP) for DOT comment. Based on the DOT comments, the Recipient will prepare a revised OCSP with an accompanying Comment

Resolution Report. Based on DOT review of the revised OCSP, the Recipient will prepare a final OCSP. Work activities associated with the showcase will be incorporated into the OIS, as necessary.

Operational Capability Showcase. The Recipient will conduct the Operational Capability Showcase in coordination with the AOR and federal outreach activity.

Operational Capability Showcase Summary (OCSS). The showcase will be documented by the Recipient with a draft Operational Capability Showcase Summary (OCSS) indicating how the results/products of the showcase have been integrated into site outreach materials and interactions in workshops, conferences, and trade shows. The Recipient shall prepare a revised OCSS in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT review of the revised OCSS, the Recipient will deliver a final OCSS.

Travel Costs Note: The Recipient shall not incur travel costs under this task without the written prior approval from the AO. The Recipient shall document planned and conducted travel in the Outreach Plan (see Task 2-J).

Phase 3, Task 3-C Required Deliverables

- Initial Outreach Implementation Schedule (OIS)
- Outreach Materials (as specified in the Outreach Plan and OIS)
- Updated OIS with Progress/Risk Summary (monthly)
 - Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting
- Draft Operational Capability Showcase Plan (OCSP)
- Revised OCSP with Comment Resolution Report
- Final Operational Capability Showcase Plan (OCSP)
- Operational Capability Showcase
- Draft Operational Capability Showcase Summary (OCSS)
- Revised OCSS with Comment Resolution Report
- Final Operational Capability Showcase Summary

3-D. PERFORMANCE MEASUREMENT AND INDEPENDENT EVALUATION SUPPORT

In this task, the Recipient collects, processes, and distributes data according to the updated PMESP to measure the impact of the deployment on key measures (e.g., individual traveler personal mobility, population accessibility and transportation system efficiency and effectiveness), and to support Independent Evaluation effort. The

collection, processing, and transfer of data from the deployment site in support of performance measurement and evaluation is documented within the DMP (itself consistent with the PMESP).

In this phase, the focus of this task is measuring the impact of deployed technologies, services and/or components and the overall impact of the deployment on site-identified key performance measures. As appropriate and directed by DOT, the Recipient shall coordinate with the Independent Evaluator and facilitate Independent Evaluator access to Recipient team members and stakeholders.

In addition to the activities described above, in this task the Recipient will execute as outlined in the PMESP.

Monthly PMESS Update. In this task, a work breakdown structure (see Section F.3) of activities (and dependencies) required to implement the PMESP (and DMP) for the specific purposes of the performance measurement and evaluation is documented by the Recipient in a PMESS. This will be a continuation of the PMESS updates performed in Task 2-K. In particular, the PMESS will identify milestones, performance summary reports, and the delivery of post-deployment (“after”) data for coordination with DOT. If there is a control area and/or group used for comparison, then the “without” data and performance reports for the same post-deployment time period also needs to be delivered.

The Recipient shall prepare monthly updates to the PMESS to the AOR for review. The Recipient shall update the PMESS in response to DOT comments on format and content, as well as to document progress against plan and track risks/issues (see Section F.3). The updated PMESS will include a concise summary of activities underway, progress made since the last update, and data impact log to record any changes that impact data needed for performance measurement effort.

Phase 2 Deliverable Updates. Periodically (but no less than once) the Recipient will update the PMESP and DMP in Phase 3. The Recipient shall document within the updated PMESP any/all analytical models and algorithmic methodologies utilized in performance measure calculation.

Performance Measurement Materials. The Recipient shall deliver the products (e.g., Pre-Deployment Performance Data, System Performance Reports and Performance Measurement Results) identified in the PMESP and other supporting information on or before delivery dates identified in the PMESS.

Site Performance Measurement Dashboard. The Recipient shall develop at least one dashboard that shows performance to date on all key performance measures and targets (for each deployment site). All dashboards should be updated regularly, as per the PMESS.

Phase 3, Task 3-D Required Deliverables

- Updated Performance Measurement and Evaluation Support Schedule (PMESS), (monthly):
 - Element of Monthly Progress Report Part I: Technical Progress and Status Summary, see Section F.3 Monthly Progress Reporting
- Updated PMESP (minimum one update)
- Updated DMP (minimum one update)
- Performance Measurement Materials identified in the PMESP and PMESS (e.g., Post-Deployment Performance Data, System Performance Reports, Performance Measurement Results) and other supporting information
- Site Performance Measurement Dashboard
- Public-facing Data (Regular updates as documented in the DMP and PMESS)

3-E. POST-DEPLOYMENT TRANSITION PLANNING

This task area covers planning for the transition of the system from operations under the aegis of the Complete Trip-ITS4US Deployment Program and into routine operational practice. The Recipient shall draw upon and update relevant Phase 1 deliverables, in particular, the IPFP. This Phase 1 task calls for an agreement regarding the main elements of the ConOps, performance measures and targets, operational changes associated with the deployment, governance framework and processes, and financial agreements. This agreement was to include a vision of how these arrangements are expected to be altered or adapted in the post-deployment period to ensure a transition to permanent operational practice. Task 13, ICTDP, from Phase 1 is also relevant and calls for governance agreements and financial agreements (updated as required).

Comprehensive Transition Plan (CTP). The Recipient shall develop a Comprehensive Transition Plan (CTP) that identifies the concepts, applications, governance framework, agreements, key documents, and equipment to be maintained as elements of routine operational practice after the completion of Phase 3. The CTP will have one section for concepts and applications found to be successful and included in continuing operations, and one section for concepts and applications found to be unsuccessful and to be removed from continuing operations. The CTP will provide rationale for each successful and unsuccessful element. The CTP shall describe what organizational responsibilities will be taken in the post-deployment period compared to organizational responsibilities

in Phase 3. The CTP shall include documentation of the financial resources and agreements required to ensure financial sustainability in the post-deployment period for all continuing elements. Public and private sources of funds should be identified and if one or more new businesses are proposed to be a source of funds, a business plan containing standard elements shall be part of the documentation. Any dependencies on external organizations should be documented. The CTP shall explicitly identify contingency plans with respect to identified uncertainties and other potential post-deployment issues posing a risk to successful post-deployment operations.

The Recipient shall deliver a draft CTP to the DOT for review. The Recipient shall prepare a revised CTP in response to DOT comments with an accompanying Comment Resolution Report. Based on DOT review of the revised CTP, the Recipient will deliver a final CTP.

Phase 3, Task 3-E Required Deliverables

- Draft Comprehensive Transition Plan (CTP)
- Revised CTP with Comment Resolution Report
- Final Comprehensive Transition Plan (CTP)

3-F. PARTICIPATION IN STANDARDS DEVELOPMENT

As in Phase 2, the Recipient shall assist the DOT in improving and expanding ITS architecture and standards to support ITS deployments based on experiences and lessons learned as a part of the deployment activity. See Task 2-L for additional details.

Phase 3, Task 3-F Required Deliverables

- SDO-specific Technical Memoranda (as defined in the Standards Plan within the SAD)
- Participation in SDO working group or committee meetings/activities (as required)

6. APPROVAL TO PROCEED TO PHASE 3

The Recipient shall not proceed with Phase 3 without the express written authorization of the AO. Costs incurred in support of Phase 3 activities will not be allowable without receipt of the AO's written authorization to proceed with Phase 3. The DOT will evaluate the following criteria regarding approval to proceed to Phase 3:

- All Phase 2 deliverables finalized with AOR comments incorporated.
- Concurrence among AOR and Site Key Personnel regarding successful Operational Readiness Testing and Operational Readiness Demonstration(s) indicating:
 - Key use cases illustrating the capability of the system to perform in accordance with the Phase 1 Concept of Operations (identified in the ORP) have been tested and suitably demonstrated.
 - Safety-related deployment capabilities (identified in the ORP) have been tested and suitably demonstrated.
- As-built versions of the ConOps, SyRS, SDD, SAD, CIP and CAP are complete.
- Deployed system aligns with ITS4US program Guiding Principles, that is, the system features:
 - Integrated, Innovative and Emerging Technologies: Design features flexible and integrated systems with innovative and emerging technologies that combine multiple technologies, modes, operators, and payment systems to facilitate the Complete Trip vision with efficient and optimized travel, for spontaneous or planned trips.
 - Inclusive Design: The deployment is designed to address the mobility and safety needs of all travelers. Ensure that all technologies, systems, modes, and infrastructure are universally accessible, affordable, and user friendly.
 - Long-term Viability and Partnerships: The deployment features robust, replicable business models and identify funding sources that allow successful deployments to continue beyond the pilot phase.
 - Open and Secure Data and Standardization: The deployment has established public access to open data platforms and encourages civic engagement and development of third-party solutions while ensuring the security of sensitive information. The deployment has adopted standards, specifications, and best practices for implementation of infrastructure and technologies.

7. DELIVERABLES

Under Due Date, "Award" = Effective Date of the Agreement

Under Due Date, "NTP" = Notice to Proceed (with Phase 3)

P h.	T k.	Deliverable	Proposed Due Date	Section 508 compliance required
2	A	Phase 2 Kick-off Meeting	award + 4 weeks	
2	A	Draft Project Management Plan (PMP)	award + 4 weeks	
2	A	Revised PMP	as needed	
2	A	Monthly Progress Report Part I	monthly	
2	A	Monthly Progress Report Part II	monthly	
2	A	Lessons Learned Logbook	monthly*	
2	A	Project Milestone Schedule	monthly*	
2	A	Updated Task Schedules	monthly*	
2	A	Project and Task Detailed Risk Register	monthly*	
2	A	Bi-Weekly Coordination Teleconference Participation	bi-weekly	
2	A	Participation in Monthly All-Site Coordination Teleconferences	monthly	
2	A	Participation in Roundtable Teleconferences	as needed	
2	B	Draft Systems Architecture Document (SAD)	award + 3 months	
2	B	Systems Architecture Walkthrough and Workbook	award + 3.5 months	
2	B	Revised SAD with Comment Resolution Report	award + 4 months	
2	B	Final Systems Architecture Document	award + 6 months	Yes
2	B	Draft Systems Design Document (SDD)	award + 9 months	
2	B	Systems Design Walkthrough and Workbook	award + 9.5 months	
2	B	Revised SDD with Comment Resolution Report	award + 10 months	
2	B	Final Systems Design Document	award + 12 months	Yes
2	B	Updated Phase 1 Deliverables (including, but not limited to: Revised Concept of Operations, Revised Systems Requirements, and Revised Integrated Complete Trip Deployment Plan)	award + 12 months	Yes
2	C	Draft Data Privacy Plan (DPP)	award + 2.5 months	
2	C	Revised DPP with Comment Resolution Report	award + 3.5 months	
2	C	Final Data Privacy Plan	award + 4 months	Yes
2	C	Notice of Privacy Management Consistency	award + 4 months	
2	C	Draft Phase 2 Data Management Plan (DMP)	award + 5 months	
2	C	Revised Phase 2 DMP with Comment Resolution Report	award + 6 months	
2	C	Final Phase 2 Data Management Plan	award + 7 months	Yes
2	D	Draft Comprehensive Acquisition Plan (CAP)	award + 8 months	
2	D	Revised CAP with Comment Resolution Report	award + 9 months	
2	D	Final Comprehensive Acquisition Plan	award + 10 months	

P h.	T k.	Deliverable	Proposed Due Date	Section 508 compliance required
2	D	Draft Comprehensive Installation Plan (CIP)	award + 11 months	
2	D	Revised CIP with Comment Resolution Report	award + 12 months	
2	D	Final Comprehensive Installation Plan	award + 13 months	Yes
2	E	Initial Software Development Schedule (SDS)	award + 4 months	
2	E	SDS Update with Progress/Risk Summary	monthly*	
2	E	Open Source Software and Supporting Documentation	per the SDS	
2	F	Initial Training Implementation Schedule (TIS)	per PTSEP	
2	F	TIS Update with Progress/Risk Summary	monthly*	
2	F	Training Materials	per the PTSEP and TIS	Yes
2	F	Human Use Approval Confirmation Materials	per the HUAS	
2	G	Draft System Test Plan	award+10 months	
2	G	Revised System Test Plan with Comment Resolution Report	award + 12.5 months	
2	G	Final System Test Plan	award + 13 months	Yes
2	G	Operational Readiness Concept Briefing	award + 6 months	
2	G	Draft Operational Readiness Plan (ORP)	award + 11 months	
2	G	ORP Walkthrough and Workbook	award + 11.5 months	
2	G	Revised ORP with Comment Resolution Report	award + 12 months	
2	G	Final Operational Readiness Plan	award + 13 months	Yes
2	H	Initial Installation and Operational Readiness Schedule (IORS)	award + 13 months	
2	H	IORS Updated with Progress/Risk Summary	monthly*	
2	H	System Test Results Summary	per the IORS	
2	H	Test Results Summary Documentation	per the ORP	
2	H	Operational Readiness Demonstrations	per the ORP	
2	I	Draft Comprehensive Maintenance and Operations Plan (CMOP)	award + 15 months	
2	I	Revised CMOP with Comment Resolution Report	award + 16 months	
2	I	Final CMOP	award + 17 months	Yes
2	J	Draft Phase 2 Outreach Plan	award + 2 months	
2	J	Revised Phase 2 Outreach Plan with Comment Resolution Report	award + 3 months	
2	J	Final Phase 2 Outreach Plan	award + 4 months	Yes
2	J	Initial Outreach Implementation Schedule (OIS)	award + 4.5 months	
2	J	OIS Updated with Progress/Risk Summary	monthly*	
2	J	Outreach Materials	per the Phase 2 Outreach Plan and OIS	Yes
2	K	Initial Performance Measurement and Evaluation Support Schedule (PMESS)	award + 6 months	
2	K	PMESS Updated with Progress/Risk Summary	monthly*	

P h.	T k.	Deliverable	Proposed Due Date	Section 508 compliance required
2	K	Updated Performance Measurement and Evaluation Support Plan (PMESP)	minimum one update	Yes
2	K	Revised Human Use Approval Summary	As needed, per IRB approval	Yes
2	K	Performance Measurement Materials identified in the PMESP and PMESS (e.g., Pre-Deployment Performance Data, System Performance Reports) and other supporting information	per the PMEPS and PMESS	Yes
2	L	SDO-specific Technical Memoranda	per Standards Plan within the SAD	
2	L	Participation in SDO Meetings/Activities	as required	
3	A	Phase 3 Kick-off Meeting	NTP + 4 weeks	
3	A	Project Management Plan (PMP)	NTP + 4 weeks	
3	A	Revised PMP	as required	
3	A	Monthly Progress Report Part I	monthly	
3	A	Monthly Progress Report Part II	monthly	
3	A	Lessons Learned Logbook	monthly*	
3	A	Project Milestone Schedule	monthly*	
3	A	Updated Task Schedules	monthly*	
3	A	Project and Task Detailed Risk Register	monthly*	
3	A	Participation in Site-Specific Bi-Weekly Coordination Teleconferences	bi-weekly	
3	A	Participation in Monthly All-Site Coordination Teleconferences	monthly	
3	A	Participation in Periodic Roundtable Teleconferences	as needed	
3	B	Initial System Operations and Maintenance Schedule (SOMS)	NTP + 1 month	
3	B	Updated SOMS with Progress/Risk Summary	monthly*	
3	C	Initial Outreach Implementation Schedule (OIS)	NTP + 1 month	
3	C	Outreach Materials	per the Phase 2 Outreach Plan and OIS	Yes
3	C	Updated OIS with Progress/Risk Summary	monthly*	
3	C	Draft Operational Capability Showcase Plan (OCSP)	NTP + 1.5 months	
3	C	Revised OCSP with Comment Resolution Report	NTP + 2.5 months	
3	C	Final Operational Capability Showcase Plan (OCSP)	NTP + 3 months	Yes
3	C	Operational Capability Showcase	NTP + 12 months	
3	C	Draft Operational Capability Showcase Summary (OCSS)	NTP + 13 months	
3	C	Revised OCSS with Comment Resolution Report	NTP + 14 months	

P h.	T k.	Deliverable	Proposed Due Date	Section 508 compliance required
3	C	Final Operational Capability Showcase Summary	NTP + 14.5 months	Yes
3	D	Updated PMESS with Progress/Risk Summary	monthly*	
3	D	Performance Measurement Materials identified in the PMESP and PMESS (e.g., Pre-Deployment Performance Data, System Performance Reports, Performance Measurement Results) and other supporting information	per the PMESS	Yes
3	D	Site Performance Measurement Dashboard	per the PMESS	Yes
3	D	Updated PMESP	as needed, minimum one update	Yes
3	D	Updated DMP	As needed, minimum one update	Yes
3	D	Public-facing Data	per the DMP and PMESS	
3	E	Draft Comprehensive Transition Plan (CTP)	NTP + 12 months	
3	E	Revised CTP with Comment Resolution Report	NTP + 13 months	
3	E	Final Comprehensive Transition Plan	NTP + 14 months	Yes
3	F	SDO-specific Technical Memoranda	per Standards Plan within the SAD	
3	F	Participation in SDO meetings/activities	as required	

* As part of the Monthly Progress Report Part I

NOTE: Section 508 requirements are included in the General Terms and Conditions available online at: <http://www.fhwa.dot.gov/aaa/generaltermsconditions.cfm>

<end of section>

SECTION B – FEDERAL AWARD INFORMATION**1. FUNDING**

The total potential cumulative value available for multiple awards under this NOFO is estimated to be \$39,489,686, which consists of a Federal share of \$31,375,749 and a Non-Federal Share (Cost Share) of \$8,113,931, **subject to the availability of Federal funds**. The Federal funds are authorized under section 6002(a) of Public Law 114-94, the Fixing America's Surface Transportation Act (FAST Act) and extensions to carry out a comprehensive program of intelligent transportation system research and development.

Federal funds (currently available): \$0

Federal funds (subject to availability): \$31,375,749

The Government's obligation under any resulting award is contingent upon the availability of funding from which payment for agreement purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the Agreement Officer (AO) and until the awardee receives notice of such availability, to be confirmed in writing by the AO.

Federal funding up to the total amount listed below by project may be made available for awards, subject to the availability of funds.

Funding Profile by Project	<i>Health Connector for the Most Vulnerable</i>	<i>Safe Trips in a Connected Transportation Network</i>	<i>Trip Planning for All</i>	<i>Transportation Data Equity Initiative</i>	<i>Complete Trip Deployment in Buffalo</i>	<i>Total</i>
Ph. 2 Federal	\$1,828,816	\$5,327,200	\$2,271,000	\$7,659,000	\$3,995,000	\$21,081,016
Ph. 2 Cost Share	\$457,204	\$1,331,800	\$620,000	\$2,000,000	\$1,020,000	\$5,429,004
Ph. 2 Subtotal	\$2,286,020	\$6,659,000	\$2,891,000	\$9,659,000	\$5,015,000	\$26,510,020
Ph. 3 Federal	\$1,043,733	\$2,724,000	\$1,790,000	\$2,000,000	\$2,737,000	\$10,294,733
Ph. 3 Cost Share	\$260,933	\$681,000	\$495,000	\$500,000	\$748,000	\$2,684,933
Ph. 3 Subtotal	\$1,304,666	\$3,405,000	\$2,285,000	\$2,500,000	\$3,485,000	\$12,979,666
Federal (Ph. 2 & 3)	\$2,872,549	\$8,051,200	\$4,061,000	\$9,659,000	\$6,732,000	\$31,375,749

Funding Profile by Project	<i>Health Connector for the Most Vulnerable</i>	<i>Safe Trips in a Connected Transportation Network</i>	<i>Trip Planning for All</i>	<i>Transportation Data Equity Initiative</i>	<i>Complete Trip Deployment in Buffalo</i>	<i>Total</i>
Cost Share (Ph. 2 & 3)	\$718,137	\$2,012,800	\$1,115,000	\$2,500,000	\$1,768,000	\$8,113,937
TOTAL (Ph. 2 & 3, Federal + Cost Share)	\$3,590,686	\$10,064,000	\$5,176,000	\$12,159,000	\$8,500,000	\$39,489,686

NOTES:

- The estimated amounts listed above reflect agreed-upon estimated Federal share during the Phase 1 contract award process. Per the Phase 1 BAA, "DOT will not consider Phase 2 and Phase 3 Cooperative Agreements in excess of the total Federal funding estimated for these phases submitted as a part of the original Phase 1 proposal." Accordingly, Applicants shall not propose Federal share amounts that exceed those listed above. As needed, Applicants may shift Federal share amounts between phases, but overall Phase 2 and Phase 3 Federal share proposed shall not exceed those listed above.
- Applicants may propose cost share amounts that exceed those listed above.
- Applicants may propose a Phase 2 and/or Phase 3 Federal funding amounts that are lower than originally proposed under the Phase 1 BAA. In such case, the Applicant may reduce the proposed phase cost share amount accordingly, but must maintain the originally proposed phase cost share percentage.

2. NUMBER/TYPE OF ASSISTANCE

The FHWA anticipates making from one (1) to five (5) awards as a result of this NOFO. The planned award type is a cost reimbursement cooperative agreement with cost-sharing.

3. PERIOD OF PERFORMANCE

The period of performance for awards is estimated to be 42 months from the effective date of the award but may vary by deployment project.

Phase 2: Maximum 24 months

Phase 3: Minimum 18 months

4. DEGREE OF FEDERAL INVOLVEMENT

The FHWA anticipates substantial Federal involvement between it and the Recipient during the course of this project. The anticipated Federal involvement will include:

- Technical assistance and guidance to the Recipient,
- Close monitoring of performance,
- Involvement in technical decisions,
- Participation in status meetings, including kick off meeting and annual budget reviews, and
- Review and comment on draft documents as appropriate.

<end of section>

SECTION C – ELIGIBILITY INFORMATION

1. ELIGIBLE APPLICANTS

This NOFO is set-aside with applicant eligibility limited to the following Phase 1 projects, previously selected by DOT for Phase 1 contract awards (see <https://www.its.dot.gov/its4us/index.htm>).

1. *Health Connector for the Most Vulnerable: An Inclusive Mobility Experience from Beginning to End*, location: Dallas County, Iowa.
2. *Safe Trips in a Connected Transportation Network (ST-CTN)*, location: Gwinnett County, Georgia.
3. *Trip Planning for All*, location: states of Washington, Oregon, and California.
4. *Transportation Data Equity Initiative*, location: King/Snohomish Counties, Washington; Multnomah/Columbia Counties, Oregon; Harford/Baltimore Counties, Maryland.
5. *Complete Trip Deployment in Buffalo*, location: Buffalo, New York.

Phase 2 Prime Applicant eligibility is restricted to public-sector organizations capable of executing and managing a cooperative agreement for Phases 2 and 3. Further, the Phase 2 Prime Applicant must have been a partner on the Phase 1 project team and identified as Phase 2 Prime Applicant/Lead in the site Phase 1 Institutional, Partnership, and Financial Plan (IPFP).

Note: For the purposes of the deployment program, the term *partner* specifically refers to an organization or individual identified as an active deployment team member in the Phase 1 IPFP.

The Prime Applicant acts in a lead role with respect to a broader project team composed of other organizations, including but not limited to public sector agencies, non-profit organizations, academic institutions, and the private sector.

2. COST SHARING OR MATCHING

Cost sharing or matching is required under this cooperative agreement. The Federal share payable under this award shall not exceed 80 percent of the overall project cost. Overall project cost consists of the total value of Federal share and cost share combined. Applicants must ensure the project cost share represents a minimum of 20 percent of the overall project cost (not 20 percent of the Federal share only). Program income must be handled in accordance with SECTION F.

<end of section>

SECTION D - APPLICATION SUBMISSION INFORMATION AND ORAL PRESENTATIONS

1. APPLICATION PACKAGE

Applicants may obtain application forms at [grants.gov](https://www.grants.gov) under the Notice of Funding Opportunity Number cited herein.

The Applicant must complete and submit all forms included in the application package for this Notice as contained at www.grants.gov.

2. CONTENT AND FORM OF APPLICATION SUBMISSION

Item	Due Date	Submit To	Content
DRAFT Application	See Page 1	By Email to sarah.tarpgaard@dot.gov	Submit separate electronic files for: Vol. 1 Parts I, II, and III Vol. 2 Parts I and II only
FINAL Application	See Page 1	Via www.Grants.gov	Submit separate electronic files for: Vol. 1 Parts I, II, and III Vol. 2 Parts I, II, and III (Vol. 2 Part III is forms to be completed using grants.gov templates.)
ORAL Presentation	See Page 1	By Email to sarah.tarpgaard@dot.gov Presentation at DOT Headquarters in DC or by virtual means.	Submit 25 hard copies for in-person events, and 1 electronic file of presentation slides. If virtual, submit 1 electronic file.

Note: The DOT intends to provide written feedback to each Applicant regarding their Draft Application by 2/18/2022. The feedback is intended to be addressed in the Applicant's Final Application.

- Applications must be prepared on 8½ x 11- inch paper. Pages that exceed this size, such as foldouts, are not allowable.
- Narrative text must be printed using a font size no less than 12-point font.
- Tables are permitted. Text in tables may be smaller than 12-point font but must be legible.
- Page margins must be a minimum of 1-inch top, bottom, and each side.
- Page numbers may be located within the 1-inch margin.
- A Header or Footer identifying the Applicant/Team and the Volume or Part, may be located within the 1-inch margins.
- Resumes are limited to one page each.
- PAGE LIMITS: Application volumes/parts shall adhere to the page count limitations listed below. The page limit includes all narratives, figures, tables, appendices, and all other ancillary materials with the exception of the following.

EXCEPTION ON PAGE LIMITS: The following items do NOT count against the page limitation.

- Document covers,
- Cover letters,
- Title pages,
- Divider pages,
- Table of contents,
- Lists of acronyms,
- Letters of intent to participate from proposed subcontractors, consultants, partners and proposed new hires, and
- Resumes. (NOTE: Resumes shall not exceed one page each.)

In the event a technical application exceeds the page limitations, the Government will evaluate only the first pages identified within the limitations.

The application package must consist of the following in this order.

Volume 1 – Technical Application

Submit Parts I, II, and III as separate files.

Part I – Technical and Management Approach (75-page limit)

- For Part I content, see Integrated Complete Trip Deployment Plan (Task 13 Template) that was provided in Phase 1. Applicants shall follow the template format. Volume 1 Part I of the application equates to the Phase 1 contract's Task 13 deliverable entitled Integrated Complete Trip Deployment Plan.

Part II – Staffing Approach (25-page limit, excluding resumes)

- Provide a detailed staffing approach to include a project organizational chart identifying proposed staff members assigned to the project. The chart must be supported with narrative text to include the title and a brief description of each position's responsibilities, as well as the proposed level of effort and allocation of time (% in relation to their other duties) for each position on a yearly basis and in summary format. The hours in this table must be consistent with the information presented in Volume 2 Budget Application.
- Provide a description of key staff including specific experience on related projects.
- Provide brief tailored one-page resumes for the three key personnel (see Section F.2.F) to include name, experience, education, and proposed role in project. These resumes do not count against the Part II page-limit.
- Include a contingency plan to replace key staff over the life of the award. The contingency plan must demonstrate that the Applicant has the ability to replace key staff without any adverse impact on performance.

Part III – Team Experience / Past Performance (10-page limit)

- For the prime Applicant, and for partners and/or vendors with a substantial role in the proposed deployment, provide a description of completed projects, ongoing projects, or both, that demonstrate organizational and staff capacity, capability and experience, that is relevant to this proposed deployment. Provide:
 - Project title, description, value, and dates;
 - Sponsor/customer point of contact to include sponsor/customer name, title, organization, email address, phone number;
 - Role of Applicant in project;
 - Explanation of why or how the project is considered relevant or similar to the effort required by this NOFO;
 - Explanation of the project goals accomplished and any cost growth or schedule delays encountered. For any project, which did not/does not

successfully achieve its goals, a brief explanation of the reason(s) for such shortcomings and any demonstrated corrective actions taken to avoid recurrence.

NOTE: Prior to award, FHWA may contact past sponsor/customers to support an evaluation of Past Performance and the Agency's risk assessment of the application.

Volume 2 – Budget Application - no page limit

Part I – Cost Information (Include in Draft and Final Applications)

Part II – Other Financial Information (Include in Draft and Final Applications)

Part III - Application Forms (Include only in Final Application, not required for Draft Application)

Part I – COST INFORMATION

Provide a separate detailed budget plan for items (1) through (3) below.

- (1) PHASE 2 – by task, by year and for Phase 2 Total;
- (2) PHASE 3 – by task, by year and for Phase 3 Total; and
- (3) TOTAL for Phase 2 and 3.

Each budget plan shall clearly display the Federal Share, Cost Share, and Total estimated costs to perform. Applicants may use their own budget format to display the information required herein. Budget tables can be formatted similarly to the format in DOT Form 4220.44, located at: http://www.fhwa.dot.gov/aaa/pdfs/frm4220_44.pdf. However, applicants must clearly display Federal Share, Cost Share, and Total Amounts.

The detailed budget plan must include each of the following items/sub-items:

Budget tables and supporting information clearly delineating and explaining all estimated costs, with columns for Federal Share, Cost Share and Total Costs (per year and in summary form). Include the following as applicable:

- a. Labor Rates- Direct labor-by-labor categories to include hours, rates and escalation. The annual direct labor escalation rate and its basis should be clearly stated with the proposal, and adequately justified. Discuss your proposed rate as compared to historical experience and include when and how escalation will be calculated/implemented. The labor rates and annual direct labor escalations rate and its basis must be in accordance with 2 CFR 200.430.

b. Indirect Rates- Provide your organization's signed current approved indirect cost rate from the cognizant Federal agency or letter of request to cognizant agency for rate establishment or adjustment. Indirect costs rates must be established according to 2 CFR 200.414.

NOTE: Per 2 CFR 200.414(f), Indirect (F&A) Costs, any Applicant that does not have a current negotiated (including provisional) rate, except for those non-Federal entities described in 2 CFR Part 200 appendix VII, paragraph D.1.b may elect to propose a de minimis indirect rate of 10 percent of modified total direct costs.

c. Other Direct Costs- Applicants must provide a breakout and justification of Other Direct Costs by Category (travel, equipment, etc.). Direct costs must be in accordance with 2 CFR Part 200 Subpart E (Cost Principles).

d. Subcontract Costs- If subcontractors/sub-recipients (lower-tiered organizations and/or individual consultants) will be used in carrying out this project, the following minimum information concerning such, must be furnished:

- Name and address of the organization or consultant.
- Description of the portion of work to be conducted by the organization or consultant.
- Cost details for that portion of work.
- Applicant's cost/price analysis of each sub-recipient/contractor(s) showing how their price is fair and reasonable; and Applicant's cost/price analysis of each sub-recipient/contractor(s) showing how their price is fair and reasonable (this includes any sub-recipient/contractor(s) that will be included in the Federal share or the non-Federal share); and
- Letter of commitment from each sub-recipient/contractor(s) (this includes any sub-recipient/contractor(s) that will be included in the Federal share, the non-Federal share or in a non-paid (volunteer) capacity).

e. Provide detail and support for cost share as part of overall project budget.

f. Clearly delineate cost share versus Federal share.

Note: The scope of this project does not include costs for infrastructure improvement activities. Infrastructure expenses necessary to facilitate the integration of intelligent

infrastructure, vehicle, and control technologies may be allowable in minimal amounts if deemed necessary to successfully accomplish the scope of the demonstration.

Part II – OTHER BUSINESS INFORMATION

1. Identify any exceptions to the anticipated award terms and conditions as contained in Section F, Federal Award Administration Information. Identify any preexisting intellectual property that you anticipate using during award performance, and any data rights restrictions or limitations during and after the award period of performance.
2. The use of a Dun and Bradstreet (D&B) Data Universal Numbering System (DUNS) number or a Unique Entity ID (UEI) number is required on all applications for Federal grants or cooperative agreements. Please provide your organization's DUNS and/or UEI number in your budget application.
3. A statement to indicate whether your organization has previously completed an A-133 Single Audit and, if so, the date that the last A-133 Single Audit was completed.
4. A statement regarding Conflicts of Interest. The Applicant must disclose in writing any actual or potential personal or organizational conflict of interest in its application that describes in a concise manner all past, present or planned organizational, contractual or other interest(s), which may affect the Applicants' ability to perform the proposed contract in an impartial and objective manner. Actual or potential conflicts of interest may include but are not limited to any past, present or planned contractual, financial, or other relationships, obligations, commitments or responsibilities, which may bias the Applicant or affect the Applicant's ability to perform the agreement in an impartial and objective manner. The AO will review the statement(s) and may require additional relevant information from the Applicant. All such information, and any other relevant information known to DOT, will be used to determine whether an award to the Applicant may create an actual or potential conflict of interest. If any such conflict of interest is found to exist, the AO may (a) disqualify the Applicant, or (b) determine that it is otherwise in the best interest of the United States to contract with the Applicant and include appropriate provisions to mitigate or avoid such conflict in the agreement pursuant to 2 CFR 200.112.
5. A statement to indicate whether a Federal or State organization has audited or reviewed the Applicant's accounting system, purchasing system, and/or property control system. If such systems have been reviewed, provide summary information of the audit/review results to include as applicable summary letter or agreement, date of audit/review, Federal or State point of contact for such review.

6. Terminated Contracts - List any contract/agreement awarded to the Applicant that was subsequently terminated for convenience of the Government within the past 3 years, and any contract/agreement that was terminated for default within the past 5 years. Briefly explain the circumstances in each instance.
7. Describe how your organization will obtain the necessary resources to fund and fulfill the proposed cost share, as applicable.
8. The Applicant is directed to review Title 2 CFR Part 170 (http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title02/2cfr170_main_02.tpl) dated November 12, 2020, and Appendix A thereto, and acknowledge in its application that it understands the requirement, has the necessary processes and systems in place, and is prepared to fully comply with the reporting described in the term if it receives funding resulting from this NOFO. The text of Appendix A will be incorporated in the award document as a General Term and Condition as referenced under this NOFO's Section F, Federal Award Administration Information.
9. Disclose any violations of Federal criminal law involving fraud, bribery, or gratuity violations. Failure to make required disclosures can result in any of the remedies described in 2 CFR 200.339 entitled Remedies for Noncompliance, including suspension or debarment. (See also 2 CFR Part 180 and 31 U.S.C. 3321).
10. If a nonprofit or not-for-profit status, please provide evidence of this status preferably from the Internal Revenue Service.
11. Letters of Commitment from Partners/Team Members: Provide signed letters of commitment from proposed partners/team members, such as proposed major subcontractors, consultants, and organizations providing support activities (services, equipment, and expertise) to the deployment. Letters of Commitment show evidence that proposed major partners/team members are committed to perform their proposed role in the deployment in the event of award. Letters of Commitment should be on letterhead from the proposed partner/team member, signed by an authorized representative, and include a brief description of the proposed role, responsibility, and/or support activities proposed. Note: It is not necessary for Applicants to submit letters of support from third party organizations that support the initiative but are not proposed to perform an activity under the award.

12. Acknowledgement of acceptance of the NOFO terms and acknowledgement and acceptance of any Amendments issued to this NOFO. List NOFO Amendment numbers and issue dates, if any.

Part III - APPLICATION FORMS

1. SF424

Note: Applicants may leave fields 5a, 5b, 6, 7, and 13 blank on the form.

2. SF424A

Note on Section A:

- Block 1(a): Print opportunity title listed on page 1;
- Block 1(b): Print Assistance Listing (CFDA) number listed on page 1;
- Block 1(c): Print Total Federal Funds Requested in dollars; and,
- Block 1(d): Print Total Cost Share in dollars, and leave columns (e), (f), and (g) and rows 2, 3, and 4 blank.

3. SF424B

4. SFLLL

Note: The form must be completed and submitted even if no lobbying to report. If no lobbying to report insert none or n/a in the relevant blocks.

3. ORAL PRESENTATIONS

In addition to the written application, the Applicant shall provide an Oral Presentation to the DOT. The Government reserves the right to record video or audio of such Oral Presentation(s).

Schedule and Location for Oral Presentations

The DOT will contact the Applicants to schedule the planned Oral Presentations and provide further details. Oral Presentations will be held virtually, or in Washington, DC, at the DOT Headquarters, or as a hybrid in-person/virtual event. Oral Presentations are estimated to occur within the range of dates listed on page 1. Oral Presentations shall comply with these instructions and any additional instructions that the Government may provide.

Format

Each Oral Presentation will occur as follows:

- The Applicant will have a maximum of 75 minutes to present their proposed approach.
- The Government reserves the right to hold a question-and-answer session immediately after the Oral Presentation. The question-and-answer session does not count against the Oral Presentation time limit.

Participation and Attendance

An Applicant's Oral Presentation team shall include the proposed Phase 2 Deployment Lead, Systems Engineering Lead, Project Management Lead, and up to three others. Regardless of location (in-person, virtual, or hybrid), the Applicant may have a maximum of 6 participants in the Oral Presentation team. Team participants may be from the prime Applicant, proposed subcontractors/consultants/partners, or a combination thereof as deemed appropriately representative by the Applicant.

Topics

During the Oral Presentation, the Applicant shall, at a minimum, address the following topics:

1. Introduction of presenting personnel with their title/position and role in this project.
2. Executive Summary of proposed deployment.
3. Describe your technical, management and staffing approach to performing the deployment.
4. Describe proposed key subcontracting, consulting or partnership/teaming arrangements.
5. Describe key performance measures and outcomes.
6. Describe your capacity, capability and experience to perform the proposed deployment within the time frame allocated to Phases 2 and 3.
7. Any additional topics provided by the DOT prior to the Oral Presentation.

Presentation Media

Applicants shall prepare all presentations using electronic presentation tools when making its Oral Presentation. The Applicants shall provide, at the time of an in-person Oral Presentation, 25 hard copies of the presentation materials to the Government, and an electronic version of the presentation materials. For virtual-only Oral Presentations, an electronic version is sufficient.

4. UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD (SAM)

The Applicant is required to: (i) be registered in SAM before submitting its application; (ii) provide a valid unique entity identifier in its application; and (iii) continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency.

The Federal awarding agency may not make a Federal award to an Applicant until the Applicant has complied with all applicable unique entity identifier and SAM requirements. If an Applicant has not fully complied with the requirements by the time the Federal awarding agency is ready to make a Federal award, the Federal awarding agency may determine that the Applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another Applicant.

5. SUBMISSION DATES AND TIMES

The final application must be received electronically through www.grants.gov by the application due date/time listed on page 1 of this NOFO.

The deadline stated is the date and time by which the agency must receive the full and completed application, including all required sections.

A late application will not be reviewed or considered unless the AO determines that doing so is in the FHWA's best interest.

6. INTERGOVERNMENTAL REVIEW

An application under this Notice of Funding Opportunity is not subject to the State review under E.O.12372.

7. FUNDING RESTRICTIONS

The FHWA will not reimburse any pre-award costs under this proposed Agreement.

8. PARTNERS, TEAM MEMBERS, VENDORS, CONSULTANTS, OR OTHER THIRD PARTIES

Applications may be submitted in partnership with other entities that intend to participate

in the implementation of the proposed project. For applications that involve a partnership with a vendor, consultant, or other third party, applicants must clearly identify the project partners by name, partnership role or scope, and budgeted sub award/subcontract amount as applicable. DOT will evaluate the experience and capability of the named project partners to successfully implement the proposed project based on the partners' experience and qualifications. Applicants are advised to submit information on the partners' qualifications and experience as a part of the application.

If an application that involves such a partnership is selected for funding, the NOFO competitive selection process will be deemed to satisfy the requirement for a competitive procurement under 2 CFR 200.319, Competition, for the named entities. Applicants are advised that any changes to the proposed partnership during grant performance may require prior written AO approval and may necessitate a competitive procurement. Entities involved in the project that are not named in the application will be required to be selected subject to the competition requirements of 2 CFR 200 Subpart D, Procurement Standards (2 CFR 200.317-327).

9. USE OF INFORMATION FOR OTHER DEPARTMENTAL PURPOSES

Information collected from applicant submissions may be used for government purposes. In addition, information gathered through this NOFO may be used to conduct outreach and engagement related to future similar opportunities.

10. OTHER SUBMISSION REQUIREMENTS

Applicants must complete and submit all forms included in the application package for this Notice as contained at www.grants.gov.

HOW TO REGISTER TO APPLY THROUGH GRANTS.GOV

Read the instructions below about registering to apply for FHWA funds. Applicants should read the registration instructions carefully and prepare the information requested before beginning the registration process. Reviewing and assembling the required information before beginning the registration process will alleviate last-minute searches for required information.

The registration process can take up to 4 weeks to complete. Therefore, registration should be done in sufficient time to ensure it does not impact your ability to meet required application submission deadlines.

If individual Applicants are eligible to apply for this grant funding opportunity, refer to:
<https://www.grants.gov/web/grants/applicants/individual-registration.html>.

Organization Applicants can find complete instructions here:
<https://www.grants.gov/web/grants/applicants/organization-registration.html>.

- a. Obtain a DUNS Number: All entities applying for funding, including renewal funding, must have a DUNS number from Dun & Bradstreet. Applicants must enter the DUNS number in the data entry field labeled "Organizational DUNS" on the SF-424 form. For more detailed instructions for obtaining a DUNS number, refer to: <https://www.grants.gov/web/grants/applicants/organization-registration/step-1-obtain-duns-number.html>.
- b. Register with the System for Award Management (SAM): In addition to having a DUNS number, organizations applying online through Grants.gov must register with SAM. All organizations must register with SAM in order to apply online. Failure to register with SAM will prevent your organization from applying through Grants.gov. For more detailed instructions for registering with SAM, refer to: <https://www.grants.gov/web/grants/applicants/organization-registration/step-2-register-with-sam.html>. (NOTE: At some point, the DUNS Number will be replaced by a "new, non-proprietary identifier" requested in, and assigned by, the System for Award Management (SAM.gov). This new identifier is being called the Unique Entity Identifier (UEI), or the Entity ID. Grants.gov has begun preparing for this transition by educating users about the upcoming changes and updating field labels and references to the DUNS Number (the current identifier) within the Grants.gov system. Users should continue using the DUNS Number in UEI fields until further notice. To learn more about SAM's rollout of the UEI, please visit gsa.gov/entityid.)
- c. Create a Grants.gov Account: The next step in the registration process is to create an account with Grants.gov. Applicants must know their organization's DUNS number to complete this process. Completing this process automatically triggers an email request for Applicant roles to the organization's E-Business Point of Contact (EBiz POC) for review. The EBiz POC is a representative from your organization who is the contact listed for SAM. To apply for grants on behalf of your organization, you will need the Authorized Organizational Representative (AOR) role. For more detailed instructions about creating a profile on Grants.gov, refer to: <https://www.grants.gov/web/grants/applicants/organization-registration/step-3-username-password.html>.

- d. **Authorize Grants.gov Roles:** After creating an account on Grants.gov, the EBiz POC receives an email notifying them of your registration and request for roles. The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the AOR role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been approved as an AOR. For more detailed instructions about creating a profile on Grants.gov, refer to:
<https://www.grants.gov/web/grants/applicants/organization-registration/step-4-aor-authorization.html>.
- e. **Track Role Status:** To track your role request, refer to:
<https://www.grants.gov/web/grants/applicants/organization-registration/step-5-track-aor-status.html>.

Electronic Signature: When applications are submitted through Grants.gov, the name of the organization's AOR that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC must authorize individuals who are able to make legally binding commitments on behalf of the organization as an AOR; this step is often missed, and it is crucial for valid and timely submissions.

HOW TO SUBMIT AN APPLICATION TO FHWA VIA GRANTS.GOV

Grants.gov Applicants can apply online using Workspace. Workspace is a shared, online environment where members of a grant team may simultaneously access and edit different Webforms within an application. For each funding opportunity announcement, you can create individual instances of a Workspace.

Below is an overview of applying on Grants.gov. For access to complete instructions on how to apply for opportunities, refer to:

<https://www.grants.gov/web/grants/applicants/apply-for-grants.html>.

- a. **Create a Workspace:** Creating a Workspace allows you to complete it online and route it through your organization for review before submitting.
- b. **Complete a Workspace:** Add participants to the Workspace, complete all the required forms, and check for errors before submission.

1. Adobe Reader: If you decide not to apply by filling out Webforms you can download individual PDF forms in Workspace so that they will appear similar to other Standard or FHWA forms. The individual PDF forms can be downloaded and saved to your local device storage, network drive(s), or external drives, then accessed through Adobe Reader.

NOTE: Visit the Adobe Software Compatibility page on Grants.gov to download the appropriate version of the software at:

<https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html>.

2. Mandatory Fields in Forms: In the forms, you will note fields marked with an asterisk and a different background color. These fields are mandatory fields that must be completed to successfully submit your application.
 3. Complete SF-424 Fields First: The forms are designed to fill in common required fields across other forms, such as the Applicant name, address, and DUNS number. To trigger this feature, an Applicant must complete the SF-424 information first. Once it is completed, the information will transfer to the other forms.
- c. Submit a Workspace: An application may be submitted through Workspace by clicking the Sign and Submit button on the Manage Workspace page, under the Forms tab. Grants.gov recommends submitting your application package at least 24-48 hours prior to the close date to provide you with time to correct any potential technical issues that may disrupt the application submission.
 - d. Track a Workspace: After successfully submitting a Workspace package, a Grants.gov Tracking Number (GRANTXXXXXXXX) is automatically assigned to the package. The number will be listed on the Confirmation page that is generated after submission.

For additional training resources, including video tutorials, refer to:

<https://www.grants.gov/web/grants/applicants/applicant-training.html>.

Applicant Support: Grants.gov provides 24/7 support via the toll-free number 1-800-518-4726 and email at support@grants.gov. For questions related to the specific grant opportunity, contact the number listed in the application package of the grant you are applying for. If you are experiencing difficulties with your submission, it is best to call the Grants.gov Support Center and get a ticket number. The Support Center ticket number will assist FHWA with tracking your issue and understanding background

information on the issue.

In the event of system problems or technical difficulties with the application submittal using grants.gov, Applicants should contact the FHWA point of contact designated in the NOFO for questions. If Applicants are unable to use the system due to technical difficulties, Applicants must e-mail applications to the FHWA point of contact no later than the application deadline cited above.

<end of section>

SECTION E - APPLICATION REVIEW INFORMATION

1. CRITERIA

The Government will evaluate applications on following criteria:

MERIT: FHWA will evaluate the applications against the following technical evaluation criteria, which are of equal importance. These criteria are distinct from eligibility criteria (see Section C) that are addressed before an application is accepted for review.

A. Demonstration of a sound deployment concept and technical approach, including:

- Site boundaries and the proposed location of key deployment elements;
- Estimated numbers of vehicles, participants, in-vehicle or mobile devices, roadside infrastructure installations required;
- Applications and capabilities to be deployed;
- A structured deployment approach based on systems engineering principles;
- Performance measures used to characterize the impact of the deployment, including methods for the measurement of system performance isolated from other confounding factors;
- A plan to ensure the effective safety management of the system;
- Clear methods to ensure the security of the system and protection of the privacy of participants;
- An effective outreach plan that can be coordinated in conjunction with DOT outreach efforts;
- A clear and effective institutional framework for managing and governing the deployment that addresses long-term financial sustainability;
- Appropriate data management and sharing of data generated by the system to support interaction with DOT and other stakeholders; and
- A plan to train staff and participants thoroughly prior to operations.

B. Demonstration of a sound staffing and management approach to performing the deployment, including:

- A sound project management approach with clear structure and well-defined areas of responsibility;
- A sound staffing plan detailing organizations and staff responsibility throughout Phases 2 and 3;
- Key staff that demonstrate appropriate qualifications and expertise to execute the role identified in the staffing plan;

- An integrated schedule demonstrating how the system can be successfully designed, deployed and tested within the maximum 24 months allocated to Phase 2; and
- An integrated schedule demonstrating how the system can be successfully operated, maintained and evaluated for a minimum of 18 months in Phase 3.

C. Demonstration of sufficient organizational experience and past performance to perform the proposed work successfully, including:

- Demonstrated lead entity past performance and overall team experience in successfully performing projects of similar size and complexity to ensure adequate organizational capacity, administrative capability, and technical experience necessary to successfully perform the proposed deployment.

COST: Relative cost will be considered in the award decision. The budget application will be analyzed to assess cost reasonableness and conformance to applicable cost principles. Proposed federal share may not exceed project specific maximum values documented tabular form in Section B.1. This evaluation factor will not be rated.

DEPARTMENTAL GOALS

After applying the above criteria, DOT will take into account the following Departmental goals in the selection process:

1. RACIAL EQUITY & BARRIERS TO OPPORTUNITY

DOT will consider the extent to which the project: (i) increases transportation choices and equity for individuals; (ii) expands access to essential services for communities across the United States, particularly for underserved or disadvantaged communities; (iii) improves connectivity for citizens to jobs, health care, and other critical destinations, or (iv) proactively addresses racial equity and barriers to opportunity, as reflected in Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* (86 FR 7009), through the planning and deployment process. DOT will assess whether the project addresses this objective, including but not limited to the following examples:

- A racial equity impact analysis has been completed for the project.
- The project sponsor has adopted an equity and inclusion

program/plan or has otherwise instituted equity-focused policies related to project procurement, material sourcing, construction, inspection, hiring, or other activities designed to ensure racial equity in the overall project delivery and implementation.

2. CLIMATE CHANGE AND SUSTAINABILITY

DOT will consider the extent to which the project demonstrates effort to consider climate change and sustainability impacts in support of Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad* (86 FR 7619).

3. RURAL OUTCOMES

If applicable, DOT will consider the extent to which the project considers how to address the challenges faced by rural areas, consistent with the Department's R.O.U.T.E.S. Initiative (<https://www.transportation.gov/rural>). The Department recognizes that rural transportation networks face unique challenges in safety, infrastructure condition, and passenger and freight usage.

2. REVIEW AND SELECTION PROCESS

The DOT will utilize the following merit review process to evaluate applications:

A panel of DOT experts will evaluate all eligible technical applications and Oral Presentations using the merit criteria listed above. The panel will collectively rate applications and Oral Presentations based the evaluation criteria.

The DOT will select for award the applications that are considered the most advantageous to the DOT using the criteria and Departmental objectives cited above, and subject to the results of an Applicant risk assessment.

DOT personnel from the FHWA Office of Acquisition and Grants Management will evaluate the cost criteria listed above and conduct a risk assessment of the selected Applicants prior to award as described below.

The Government reserves the right to not make an award to an Applicant based on the results of this risk assessment. The selection official responsible for final award decisions is the Director, Assistance Agreements and Acquisition Services, Office of Acquisition and Grants Management, Federal Highway Administration. The Government is not obligated to make any award as a result of this notice.

Risk Assessment

The Government will assess the risks posed by an Applicant before they receive an award. This Risk Assessment will include evaluation of some or all of the following items relative to the Applicant and/or sub-applicants as applicable:

(1) Applicant's financial stability;

(2) Applicant's quality of management systems and ability to meet the management standards prescribed in 2 CFR Part 200;

(3) Applicant's history of performance;

Note: History of performance includes the Applicant's record in managing Federal awards, if it is a prior Recipient of Federal awards, including timeliness of compliance with applicable reporting requirements, conformance to the terms and conditions of previous Federal awards, and if applicable, the extent to which any previously awarded amounts will be expended prior to future awards. The Government will evaluate the relevant merits of the Applicant's history of performance based on its reputation and record with its current and/or former customers with respect to quality, timeliness and cost control. The history of performance will be reviewed to assure that the Applicant has relevant and successful experience and will be considered in the risk assessment. In evaluating history of performance, the Government may consider both written information provided in the application, as well as any other information available to the Government through outside sources.

(4) Applicant's audit reports and findings from audits performed on the Applicant pursuant to 2 CFR Part 200 Subpart F—Audit Requirements or the reports and findings of any other available audits;

(5) Applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-Federal entities;

(6) Applicant's potential for conflict of interest if applicable; and

Note: The FHWA will review information provided by the Applicant, and any other relevant information known to DOT, to determine whether an award to the Applicant may create an actual or potential conflict of interest. If any such conflict of interest is found to exist, the AO may (a)

disqualify the Applicant, or (b) determine that it is otherwise in the best interest of the United States to award to the Applicant and include appropriate provisions to mitigate or avoid such conflict in the Agreement pursuant to 2 CFR 200.112.

(7) Applicant's eligibility to receive Federal funding. Per the guidelines on government-wide suspension and debarment in 2 CFR Part 180, the Government will confirm that the Applicant and any named sub-applicants are not debarred, suspended or otherwise excluded from or ineligible for participation in Federal programs or activities.

3. REVIEW OF AVAILABLE INFORMATION

Pursuant to 2 CFR 200.206, prior to making a Federal award, the Federal awarding Agency is required to review information available through any OMB-designated repositories of government-wide eligibility qualification or financial integrity information, such as Federal Awardee Performance and Integrity Information System (FAPIS), D&B, and "Do Not Pay." The Government's review of this information will occur as part of the risk assessment. An applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM. FHWA will consider any comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in 2 CFR 200.206.

NOTE: If an Applicant is determined to be high risk, additional reporting requirements or other special conditions may apply to the resulting award to mitigate risks.

4. ANTICIPATED ANNOUNCEMENT AND FEDERAL AWARD DATES

The FHWA anticipates making award by **5/13/2022**.

<end of section>

SECTION F – FEDERAL AWARD ADMINISTRATION INFORMATION

The following are cooperative agreement award terms and conditions that will apply to and be inserted into any resulting awards made based on this NOFO.

1. FEDERAL AWARD NOTICES

The award document, signed by the AO, is the authorizing document, whether it is provided through postal mail or by electronic means and to whom. Only the AO can bind the Federal Government to the expenditure of funds.

2. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

All awards will be administered pursuant to the Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards found in 2 CFR Part 200, as adopted by DOT at 2 CFR Part 1201. Applicable Federal laws, rules and regulations set forth in 23 U.S.C. and 23 CFR also apply.

GENERAL CLAUSES

The online clauses entitled “General Terms and Conditions for Assistance Award (for award effective after June 22, 2015),” apply to the resulting award, and are available in full text online at:

https://www.fhwa.dot.gov/cfo/contractor_recip/gtandc_generaltermsconditions.cfm

The online clauses are incorporated into the award by reference and include the following:

1. Governing Regulations
2. Requirements for Implementing Section 508 Standards
3. Responsibilities of The Recipient
4. Non-Domestic Travel
5. Amendments
6. Agreement Officer's Representative (AOR)
7. Payment
8. Funds Notification
9. Acknowledgement of Support and Disclaimer
10. Site Visits
11. Budget Revision/Reallocation of Amounts
12. System for Award Management (SAM)
13. Printing

14. Drug Free Workplace
15. Debarment and Suspension Requirements
16. Termination and Suspension
17. Financial Assistance Policy to Ban Text Messaging While Driving
18. Reporting Executive Compensation and First-Tier Sub-Awards
19. OMB Paperwork Reduction Act
20. Conflict of Interest
21. Annual Property Report
22. Restrictions on Internal Confidentiality Agreements
23. Promoting Free Speech and Religious Liberty
24. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

SPECIAL CLAUSES

In addition to the General Clauses cited above, the following Special Clauses will apply to the resulting award.

A. PUBLIC ACCESS TO DOCUMENTS

The Recipient agrees that the resulting deliverables/documentation submitted to FHWA under the cooperative agreement may be posted online for public access and/or shared by FHWA with other interested parties. The FHWA anticipates the documents cited herein may be posted on an FHWA Website or another appropriate Website.

B. INDIRECT COSTS

Indirect costs are allowable under the cooperative agreement in accordance with the Recipient's Federally Negotiated Indirect Cost Rates as documented in writing and approved by the Recipient's cognizant Government agency. In accordance with 2 CFR 200.414(f), any non-Federal entity that does not have a current negotiated (including provisional) rate, except for those non-Federal entities described in 2 CFR Part 200, appendix VII, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. No documentation is required to justify the 10% de minimis indirect cost rate.

This Indirect Cost provision does not operate to waive the limitations on Federal funding provided in the cooperative agreement. The Recipient's audited final indirect costs are allowable only insofar as they do not cause the Recipient to exceed the total obligated funding.

C. DATA RIGHTS

The Recipient must make available to FHWA copies of all work developed in performance with the cooperative agreement, including but not limited to software and data. Data rights under the cooperative agreement shall be in accordance with 2 CFR 200.315, Intangible property.

D. PERSONALLY IDENTIFIABLE INFORMATION (PII)

The PII as defined at 2 CFR 200.1 at will not be requested unless necessary and only with prior written approval of the AO with concurrence from the AOR.

E. AVAILABLE FUNDING

The total estimated amount of Federal funding that may be provided under this Agreement is \$____(to be filled in at award) for the entire period of performance, subject to the limitations shown below:

(1) Currently, Federal funds identified on page 1 of the award document, are obligated to this agreement.

(2) Subject to availability of funds, and an executed document by the AO, the difference between the current funding and the total estimated amount of Federal funding may be obligated to this Agreement.

(3) The FHWA's liability to make payments to the Recipient is limited to those funds obligated under this Agreement as indicated above and any subsequent amendments.

F. KEY PERSONNEL

Pursuant to 2 CFR 200.308(c)(2), the Recipient must request prior written approval from the AO for any change in Key Personnel specified in the award. The following person(s) are/have been identified as Key Personnel:

Name	Title/Position
TBD – to be filled in upon award	Deployment Lead (DL)
TBD – to be filled in upon award	Systems Engineering Lead (SEL)
TBD – to be filled in upon award	Project Management Lead (PML)

Deployment Lead (DL): The DL will be responsible in articulating the vision, approach, and objectives of the overall deployment concept. The DL is responsible for creating team agreement on specific and practical performance measures, and for the implementation of performance management best practices. The DL is responsible for organizing and leading the deployment team partnership.

Systems Engineering Lead (SEL): The SEL will oversee the integration of technologies and services and manage planning integrated design, installation, operations, and maintenance. The SEL is responsible for the application of appropriate systems engineering (SE) processes and the quality of all SE artifacts. Most importantly, the SEL must manage the scope and detail of the SE process to ensure the quality of the artifacts developed as well as ensuring that the SE process can be satisfactorily completed within the designated period of performance.

Project Management Lead (PML): The PML will be responsible for the quality and timely provision of project management artifacts required in the contract and for tracking project progress against target performance throughout the project lifecycle. The PML is responsible for risk tracking and risk mitigation.

Note: The DOT expects that three different individuals will be named for each of these Key Personnel roles. The DL or the PML can be designated as the primary point-of-contact with the government AO and government AOR. This POC must be from the organization entering into the agreement.

G. PROGRAM INCOME

Pursuant to 2 CFR 200.307, program income earned during the cooperative agreement period must be added to the Federal award and used for the purposes and under the conditions of the Federal award, unless otherwise approved by the AO. Program income must not be used to offset the Federal or Recipient contribution to this project.

H. SUBAWARDS AND CONTRACTS APPROVAL

Note: Recipients must have a procurement system in compliance with 2 CFR 200.317 through 200.327. See 2 CFR 200.331, Subrecipient and contractor determinations, for definitions of subrecipient (who is awarded a subaward) versus contractor (who is awarded a contract).

Note: Recipients with a procurement system deemed approved and accepted by the Government or by the AO are exempt from the pre-approval requirements of this

clause.

Unless described in the application and funded in the approved award, the Recipient must obtain prior written approval from the AO for the subaward, transfer, or contracting out of any work under this award above the Simplified Acquisition Threshold. This provision does not apply to the acquisition of supplies, material, equipment, or general support services. Approval of each subaward or contract is contingent upon the Recipient's submittal of a written fair and reasonable price determination, and approval by the AO for each proposed contractor/sub-recipient. Consent to enter into subawards or contracts will be issued through written notification from the AO or a formal amendment to the Agreement. The following subawards and contracts are currently approved under the Agreement by the AO. This list does not include supplies, material, equipment, or general support services which are exempt from the pre-approval requirements of this clause.

(Names of approved subawardees / contractors to be filled in upon award or by amendment.)

I. ORDER OF PRECEDENCE

The Recipient's technical and budget applications are accepted, approved, and incorporated herein as Attachments. In the event of any conflict between the cooperative agreement document and the Recipient's proposal and/or application, the cooperative agreement document shall prevail.

J. DESIGNATION AS RESEARCH OR NON-RESEARCH AGREEMENT

The cooperative agreement will be designated as: Research and Development.

K. CONFERENCE SUPPORT RESTRICTIONS

The Recipient must obtain written approval from the AOR prior to incurring any costs for conference support. See the definition of conference as contained in 2 CFR 200.432. Food and beverage costs are not allowable conference expenses for reimbursement under the cooperative agreement.

NOTE: Costs of meals are allowable as a travel per diem expense for individuals on travel status and pursuant to the Travel clause of the cooperative agreement.

L. DISPUTES

The parties to the cooperative agreement will communicate with one another in good faith and in a timely and cooperative manner when raising issues under this provision. Any dispute, which for the purposes of this provision includes any disagreement or claim, between FHWA and the Recipient concerning questions of fact or law arising from or in connection with the cooperative agreement and whether or not involving alleged breach of the cooperative agreement, may be raised only under this Disputes provision.

Whenever a dispute arises, the parties will attempt to resolve the issues involved by discussion and mutual agreement as soon as practical. In no event will a dispute which arose more than 3 months prior to the notification made under the following paragraph of this provision constitute the basis for relief under this article unless FHWA waives this requirement.

Failing resolution by mutual agreement, the aggrieved party will document the dispute by notifying the other party in writing of the relevant facts, identify unresolved issues and specify the clarification or remedy sought. Within 5 working days after providing written notice to the other party, the aggrieved party may, in writing, request a decision from one level above the AO. The AO will conduct a review of the matters in dispute and render a decision in writing within 30 calendar days of receipt of such written request. Any decision of the AO is final and binding unless a party will, within 30 calendar days, request further review as provided below.

Upon written request to the FHWA Director, Office of Acquisition and Grants Management or designee, made within 30 calendar days after the AO's written decision or upon unavailability of a decision within the stated time frame under the preceding paragraph, the dispute will be further reviewed. This review will be conducted by the Director, Office of Acquisition and Grants Management. Following the review, the Director, Office of Acquisition and Grants Management, will resolve the issues and notify the parties in writing. Such resolution is not subject to further administrative review and to the extent permitted by law, will be final and binding. Nothing in the cooperative agreement is intended to prevent the parties from pursuing disputes in a United States Federal Court of competent jurisdiction.

M. CLOSEOUT OF AGREEMENT FILE

The Government will initiate the administrative closeout of the cooperative agreement after receiving evidence that all technical work and administrative requirements have

been completed. The Recipient shall furnish all required documents in support of the closeout of the cooperative agreement within the timeframes requested by the Government. The Government anticipates the timeframe to complete administrative closeout of the cooperative agreement will not exceed 6 months.

N. ANNUAL BUDGET REVIEW AND PROGRAM PLAN

The Recipient must submit an electronic copy of the Annual Budget Review and Program Plan to the AO and the AOR 60 calendar days prior to the anniversary date of the cooperative agreement. The Annual Budget Review and Program Plan must include the required certification pursuant to 2 CFR 200.415. The Annual Budget Review and Program Plan must provide a detailed schedule of activities, estimate of specific performance objectives, include forecasted expenditures, and schedule of milestones for the upcoming year. If there are no proposed deviations from the Approved Project Budget, the Annual Budget Review must contain a statement stating such. The Recipient must meet via teleconference or Web conference with FHWA to discuss the Annual Budget Review and Program Plan. Work proposed under the Annual Budget Review and Program Plan must not commence until AO's written approval is received.

O. TRAVEL

Travel and per diem authorized under the cooperative agreement will be reimbursed in accordance with the travel costs section of 2 CFR 200.475.

P. RESTRICTIONS ON INFRASTRUCTURE EXPENSES

Per 2 CFR 200, Subpart E, Cost Principles, costs incurred under this award must be necessary and reasonable for the performance of the project to be considered allowable expenses for reimbursement. In addition, costs incurred must conform to any limitations or exclusions set forth in the Federal award as to types or amount of cost items.

Under this agreement, infrastructure improvement expenses are generally not considered allowable costs for reimbursement under the Federal share, nor for credit towards the cost share. Examples of infrastructure improvement expenses include fixing curb cuts or pavement markings. Minimal infrastructure-related costs that are necessary to carry out the scope of the deployment may be deemed allowable on a case-by-case basis. For example, infrastructure expenses necessary to facilitate the integration of intelligent infrastructure, vehicle, and control technologies may be allowable in minimal amounts if deemed necessary to successfully accomplish the

scope of the deployment. See also 2 CFR 200.403, Factors Affecting Allowability of Costs.

3. REPORTING

ADDRESSES FOR SUBMITTAL OF REPORTS AND DOCUMENTS

The Recipient must submit all required reports and documents, under transmittal letter referencing the Agreement number, as follows:

- Submit an electronic copy to the Agreement Officer at the following address:
 - Sarah.Tarpgaard@dot.gov
- Submit an electronic copy to the AOR at the following address:
 - <To be filled in upon award>
- Submit an electronic copy to the ITS JPO at the following address:
 - ITSProjects@dot.gov.

MONTHLY PROGRESS REPORTS

The Recipient shall provide monthly progress reporting in two parts:

- Monthly Report Part I: Technical Progress and Status Summary, and
- Monthly Report Part II: Financial Status Summary.

Monthly reports shall be delivered using the templates provided at Phase 2 kick-off.

Monthly Report Due Dates. Monthly reports (complete Part I and Part II documents) shall be delivered no later than the tenth calendar day of the month following the reporting period (e.g., for an April monthly report is due on 10 May). If the tenth of the month falls on a non-business day (i.e., weekend day or federal holiday), then the monthly reports may be delivered on the following business day.

Monthly Report Part I: Technical Progress and Status Summary. Part I provides an overall summary of technical progress to date and (to streamline reporting) provides a single deliverable comprising schedules used for status tracking in other tasks under this agreement and a single deliverable comprising project risks and risks/issues in other tasks under this agreement. Part I monthly report documents are intended to be shared among the federal ITS4US Program team, technical support contractors, and the independent evaluator. The Recipient shall provide monthly progress reports that identify all deliverables and deliverable status (not initiated, in progress X% complete,

draft delivered, in revision X% complete, final delivered, accepted). Elements of these reports (e.g., total number of participants taken from the SOMS) may be extracted for use in public-facing status materials and program dashboards. Required elements of the Part I document includes:

- *Activity Narrative (by Task)*, a narrative of activity undertaken by task (with reference to the Task-Level Reporting Schedules for more detail) and activities planned for the next monthly period. (in MS Word)
- *Updated Project Schedule* (in MS Project)
- *Updated Risk Register*, includes (to streamline reporting) a single Excel Workbook with a tab for Task 2-A/3-A for overall project-level risks, and a separate tab for tasks requiring detailed risk reporting:
 - Software Development Schedule (SDS), Task 2-E
 - Training Implementation Schedule (TIS), Task 2-F
 - Installation and Operational Readiness Testing Schedule (IORS), Task 2-H
 - Outreach Implementation Schedule (OIS), Tasks 2-J and 3-C
 - Performance Measurement and Evaluation Support Schedule (PMESS), Tasks 2-K and 3-D
 - System Operations and Maintenance Schedule (SOMS), Task 3-B
- *Program-Level Cost Narrative*, including a retrospective cost narrative, and a projected cost-to-complete narrative.
 - Note that this Program-Level Cost Narrative should include only aggregate project cost information and should not include detailed cost information (e.g., individual rates and hours).
- *Lesson Learned Logbook (LLL)*, identifying and excerpting entries created or updated (in MS Excel).
- *Task-Level Reporting Schedules*, includes (to streamline reporting) an initial and updated versions of the following in a single Excel Workbook with several tabs for tasks that require schedule reporting:
 - Software Development Schedule (SDS), Task 2-E
 - Training Implementation Schedule (TIS), Task 2-F
 - Installation and Operational Readiness Testing Schedule (IORS), Task 2-H
 - Outreach Implementation Schedule (OIS), Tasks 2-J and 3-C
 - Performance Measurement and Evaluation Support Schedule (PMESS), Tasks 2-K and 3-D
 - System Operations and Maintenance Schedule (SOMS), Task 3-B

NOTE: The WBS in these schedules should be consistent with the WBS in the project schedule identified in Task 2-A. However, these schedules could go to

lower WBS levels in order to provide appropriate schedule detail.

Monthly Report Part II: Financial Status Summary. Part II is intended to provide the AO/AOR insight on detailed status for financial reporting. The Part II document is not intended to be shared with the broader federal program team, technical support contractors, or the independent evaluators. Part II shall include:

- A summary of costs incurred for the reporting period and to date. Report costs incurred by major cost elements such as Direct Labor, Travel, Subcontractor Costs, Indirect Costs, etc. Present Federal share, Cost share, and Total.
- A comparison of total costs incurred to the total budgeted costs for the reporting period and to date.
- Projected total cost-to-complete.
- Required certification pursuant to 2 CFR 200.415.

QUARTERLY FEDERAL FINANCIAL REPORTS (SF 425)

Pursuant to 2 CFR 200.328, the Recipient must submit a Federal Financial Report (Standard Form (SF) 425) to the AO and the AOR. The Recipient must submit the report on a quarterly basis, due the 30th calendar day of the month after the quarter being reported. The final SF 425 must be submitted within 120 calendar days after the end date of the period of performance.

Calendar quarters are defined as:	Federal Financial Reports due on or before:
1st: January – March	April 30th
2nd: April – June	July 30th
3rd: July – September	October 30th
4th: October – December	January 30th

The SF 425 is available online at:

https://www.fhwa.dot.gov/cfo/contractor_recip/grant_agreement_form.cfm.

A fillable SF 425 version is available online at: <https://www.gsa.gov/cdnstatic/SF425-V2.pdf?forceDownload=1>

RECIPIENT INTEGRITY AND PERFORMANCE MATTERS

Because the Federal share of this award will be more than \$500,000 over the period of performance, the reporting requirements in 2 CFR Part 200, Appendix XII (Award Term and Condition for Recipient Integrity and Performance Matters) will apply.

<end of section>

SECTION G – FEDERAL AWARDING AGENCY CONTACTS

Address any questions to:

Sarah Tarpgaard, Agreement Officer
Federal Highway Administration
Office of Acquisition and Grants Management
Sarah.Tarpgaard@dot.gov
202-493-3225

Secondary point of contact is:

Robin Hobbs, Team Leader
Federal Highway Administration
Office of Acquisition and Grants Management
Robin.Hobbs@dot.gov
202-366-4004

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