

REVISE the text of the Cooperative Agreement in the sections cited below. If a Section or paragraph is not listed below, no text changes apply because of this modification.

- ✓ Deleted text is shown in *strikethrough*.
- ✓ Added text is underlined.

Award Information

Total Amount:		Federal Share:	\$37,873,000 -\$37,011,408
		Recipient Cost Share:	\$17,989,675 -\$17,584,220
		Total Value:	\$55,862,675 -\$54,595,628

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ATTACHMENTS

1. Smart City Vision Elements - 9 pages
- ~~2. Replacement Budget Application dated June 27, 2019 (Revised August 27, 2019) - 27 pages~~
2. Replacement Budget Application dated June 30, 2020 (Revised August 31, 2020) - 29 pages

SECTION A – PROGRAM DESCRIPTION

5. STATEMENT OF WORK

The Recipient shall conduct the Smart City Demonstration in accordance with the approved Attachment 2, subject to the terms of the award.

The Common Payment System (CPS) project is deleted from the scope of the agreement by Amendment 7. Accordingly, references to the CPS project are hereby deleted as of the effective date of Amendment 7.

Delineation of Tasks and Deliverables

TASK E: DATA MANAGEMENT AND SUPPORT FOR INDEPENDENT EVALUATION

~~As part of the Smart City Demonstration, an Independent Evaluation will be conducted by the USDOT. The Independent Evaluator will conduct an evaluation applying quantitative and qualitative evaluation methodologies to conduct before and after performance assessments; cost-benefit assessments of the demonstration; assess user acceptance/citizen satisfaction of the demonstration; document lessons learned, challenges and approaches for mitigating, addressing, and /or overcoming them; estimate total impacts, costs, and return on investment (ROI) of the demonstration; and assess if the Smart City Demonstration achieved its vision.~~

~~The Recipient shall develop an Evaluation Support Plan detailing their expected support to the independent evaluation effort. During demonstration, the Recipient shall execute its Evaluation Support Plan. The support may include provision of frequently collected data and corresponding meta data; provision of frequently monitored performance measures estimates and desired targets; limited availability of the site for the independent evaluators to conduct additional field tests and experiments to supplement data not available from the site; and participation in surveys and interviews conducted by the independent evaluators.~~

~~Systems deployed as part of the Smart City Demonstration must be capable of generating the data needed to calculate measures over time—that is, to show how well the systems are performing with respect to performance measures and targets identified in the Performance Measurement Plan. Independent evaluation will also be required to validate site system performance with respect to the targeted measures, to collect or infer contextual data that allows for the isolation and mitigation of confounding factors, and to provide supplementary evaluation with respect to a broader set of safety, environmental, mobility and public agency efficiency measures of interest to USDOT. The Recipient is responsible for supporting the independent evaluator's access to the site and to site staff to conduct evaluation-related experiments, interviews, and surveys.~~

~~To support independent evaluation, the Recipient shall apply data quality measures and processes including security protocols to convert the raw data into processed, quality data and ensure that those data are stored in a secure database, with the database schema defined by the Independent Evaluator. The Recipient shall securely transmit these data to support evaluation, on a schedule and using a medium agreed upon with the Independent Evaluator, to the Independent Evaluator's location. Data collected for use by the Independent Evaluator shall be considered "owned" by the USDOT. The Recipient shall transmit only those data required to support evaluation by the Independent Evaluator; any additional data that the site collects for its own use shall also be stored in its own secure data storage system, but kept separate from data required by the Independent Evaluator and the USDOT.~~

However, the Recipient may use data collected for the Independent Evaluator in its own analyses.

NOTE: Revise references to the Research Data Exchange (RDE) (www.its-rde.net) to the ITS Public Data Hub (<https://www.its.dot.gov/data/>).

Required Deliverables

- Data Management Plan
- ~~Independent Evaluation Support Plan~~
- ~~Data to support USDOT's Independent Evaluation~~
- Data provided to the USDOT's Research Data Exchange (RDE), ITS Public Data Hub and/or Data.gov based on coordination with the AOR

6. TABLE OF DELIVERABLES

Task	Deliverable	Original Due Date	Due Date	Publish on Recipient's Website?"
E	Data Management Plans	7/3/2017	2/26/19	Yes
E	Independent Evaluation Support Plan	12/21/2016	6/12/19	Yes
E	Data to support USDOT's Independent Evaluation	TBD	Latest start CVE: 7/8/20. Continues through 3/31/21.	No
E	Data provided to the USDOT's ITS Public Data Hub (https://www.its.dot.gov/data/) <u>and/or Data.gov based on coordination with the AOR</u>	TBD	Latest start CVE: 7/8/20. Continues through 3/31/21.	No

SECTION B – FEDERAL AWARD INFORMATION

2. COST SHARING OR MATCHING

The following amounts, as included in the approved Replacement Budget Application (Attachment 32), are hereby incorporated into this award as required Cost Sharing or Matching, subject to the terms of the award and the requirements of 2 CFR 200.

Estimated Funding Source	Estimated Cost Share Amount	Estimated Cash/In-kind
City of Columbus	\$8,000,000	Cash
State of Ohio (Ohio DOT)	\$7,000,000	In-kind
Franklin County	\$4,000,000	\$1,000,000 cash, \$3,000,000 in-kind
Total	\$19,000,000	

5. LEVERAGED PARTNER RESOURCES

In addition to the Federal Share and the Recipient Cost Share identified on page 2 of the agreement, the Recipient shall use Leveraged Partner Resources to fund and perform the demonstration. Leveraged Partner Resources are resources from third party organizations in support of the demonstration. “Key” Leveraged Partner Resources, listed below, are considered essential to the demonstration and are, therefore, approved and incorporated into this award for informational and reporting purposes. The Key Leveraged Partner Resources listed herein are **not** subject to the requirements of 2 CFR 200, or the terms of the award, except as cited below.

Requirement to Provide Copies of Key Partner Agreements: The Recipient shall provide to the Agreement Officer electronic copies of all signed Key Partner agreements, and any subsequent agreement amendments executed during the award period of performance. The Recipient shall submit such agreements and amendments within one week after execution of the agreement or amendment.

Requirement for Notification of Key and Non-Key Partner Changes: In the event the Recipient determines the need to remove, replace, or divert Leveraged Partner Resources, the Recipient must notify the Agreement Officer in writing of the proposed change in partner, circumstances surrounding the change, and the Recipient’s analysis of the impact upon the demonstration.

NOTE: The Recipient has notified the AO of the elimination of the following Key Leveraged Partner Resources from the agreement:

- Mobileye
- NXP
- Experience Columbus
- Mass Factory
- Peloton
- SPARC
- Columbus Partnership (1 of 2, shown below)

- DC Solar
- HERE
- Autodesk

Key Leveraged Partner Resources		
Key Partner	Description of Resources	Estimated Amount
Paul Allen's Vulcan, Inc.	Funding to support the deployment of electric vehicles and other carbon emission reduction strategies.	\$ 10,000,000
Mobileye (eliminated)	Installation of Mobileye's Shield +™ technology on transit buses.	\$ 1,950,000
Autodesk (eliminated)	A year-long subscription to <i>Infraworks</i>, an information modeling platform that uses 3-D visualizations and real-world data to plan major engineering projects as well as on-site training.	\$ 34,520
Amazon Web Services (AWS)	Credits to AWS Cloud services and AWS Professional Services. AWS will also provide solution architecture and best practices guidance to the Recipient.	\$1,000,000
NXP (eliminated)	Wireless communication modules that allow cars to securely exchange data, such as hazard warnings, over distances of more than a mile to prevent accidents and improve traffic flow.	\$2,500,000
Alphabet's Sidewalk Labs	Flow technology, an analytics platform that the Recipient can use to identify traffic-prone areas and parts of a city that are underserved by public transportation — all by using traffic patterns culled from aggregated, anonymized data. From that information the software can suggest solutions like ride-sharing, new transportation access or a rerouting of traffic to better serve the community.	\$230,000

Key Leveraged Partner Resources		
Key Partner	Description of Resources	Estimated Amount
AT&T	AT&T has committed to provide in-kind partnering to the City to assist with the deployment of the Columbus Connected Transportation Network (CCTN). The proposed partnering includes professional services and technical support resources; communications and data management technologies; USB cellular modems and SIM cards and connectivity; hardware to support communications and data management services.	\$1,000,000
DC Solar (eliminated)	DC Solar will partner with the City to deploy eight to ten mobile solar generators or EV charging stations in 11 month increments at locations in the City to be determined. Mobile solar generators and EV charging stations will demonstrate the use of renewable energy sources in support of fleet electrification and power generation.	\$1,500,000
Continental	Continental will deploy a roadside infrastructure sensing system; onboard V2X system, and DSRC communication systems to enable communication between roadside and onboard systems; API interfaces on cloud backend comprised of APIs for accessing data from both onboard and roadside V2X systems; basic safety messages to demonstrate the effectiveness of the CCTN on alleviating transportation-related issues such as intersection safety warnings, traffic management, automated system to regulate the flow of traffic according to real time traffic information, in-car productivity and safety, V2X warnings based on driver profile, route optimization or navigation, and reduced traffic congestion through load balancing via rerouting services enhanced with real time navigation data; and gamification of driving with incentives for drivers to behave responsibly to improve traffic condition and safety.	\$1,000,000

Key Leveraged Partner Resources		
Key Partner	Description of Resources	Estimated Amount
Experience Columbus (eliminated)	Included in Event Parking (Downtown)	\$100,000
Ohio State University	Included in EAV (Commercial)/Program Management	\$2,000,000
Greater Columbus Art Council	Included in Communications and Outreach	\$1,000,000
HERE, Inc. (eliminated)	Included in SCOS (Enabling Technology)	\$1,000,000
INRIX	Included in SCOS (Enabling Technology)	\$1,424,000
Mass Factory (App&Town) (eliminated)	Included in Enhanced Human Services (Enabling Technology)	\$40,000
SPARC (eliminated)	Included in CCTN Vehicles (Enabling Technology)	\$388,200
Peloton (eliminated)	Included in Truck Platooning (Logistic)	\$165,000
Honda	Included in CCTN Vehicles (Enabling Technology)	\$2,600,000
Battelle	Included in Program Management	\$1,000,000
Econolite	Included in CCTN (Enabling Technology)	\$280,000
Columbus Partnership (eliminated)	Included in Testing of Autonomous Vehicles (Commercial)	\$5,000,000
Columbus Partnership	Sustainment Cash Available as needed for USDOT and/or electrification deployments	\$10,000,000

Key Leveraged Partner Resources		
Key Partner	Description of Resources	Estimated Amount
TOTAL		Original \$44,211,720
		Eliminated \$11,643,200 \$12,677,720
		Revised \$32,568,520 \$31,534,000

SECTION C - FEDERAL AWARD ADMINISTRATION INFORMATION

2. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

E. AVAILABLE FUNDING

The total estimated amount of Federal funding that may be provided under this Agreement is ~~\$37,873,000~~ **\$37,011,408** for the entire period of performance, subject to the limitations shown below:

(1) Currently, Federal funds in the amount of ~~\$37,873,000~~ **\$37,011,408** are obligated to this agreement.

(2) The Federal share of the agreement is fully funded.

(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.

(4) RECAP OF FUNDS

Action	Federal Funding Obligated
Base Award	\$15,000,000
Amendment 1	\$0
Amendment 2	\$15,000,000
Amendment 5	\$7,873,000
Amendment 7	(\$861,592)
TOTAL	\$37,873,000 \$37,011,408

**M. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO
SURVEILLANCE SERVICES OR EQUIPMENT**

Federal award recipients and subrecipients are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. See Section 889 of Public Law 115-232 (National Defense Authorization Act 2019). Also, see 2 CFR 200.216 and 200.471.

[end of amendment]