AUTOMATED DRIVING SYSTEM (ADS) DEMONSTRATION GRANT

AUTOMATED DRIVING SYSTEM (ADS) DEMONSTRATION PROGRAM

CONTRA COSTA TRANSPORTATION AUTHORITY

IN PARTNERSHIP WITH AAA NORTHERN CALIFORNIA, NEVADA, & UTAH; AMG; UC BERKELEY PATH; LAWRENCE BERKELEY NATIONAL LABORATORY; VERIZON; INTEL CORPORATION; TELEGRA; AND AMAZON WEB SERVICES

U.S. DOT LEAD: FTA   **U.S. DOT CO-LEAD: NHTSA**

U.S. Department of Transportation
Federal Transit Administration

PROJECT SUMMARY

Automation Level(s): 3-4

Contra Costa Transportation Authority (CCTA) proposes to conduct three Automated Driving System (ADS) demonstrations:

PROJECT 1: ROSSMOOR FIRST MILE/LAST MILE SHARED AUTONOMOUS VEHICLE

This demonstration project will involve the use of a low-speed automated shuttle to provide a first-/last-mile connection from Rossmoor, a gated community for seniors located in Walnut Creek, CA, to a shopping center and transit service via County Connection Route 1, which provides service to downtown Walnut Creek and connection to BART rail service. The purpose of this demonstration is to increase transit accessibility for the elderly community using shared autonomous vehicles. Data gathered will be used to develop safety performance measures.

PROJECT 2: COUNTY HOSPITAL ACCESSIBLE TRANSPORTATION

This demonstration project will involve providing on-demand, wheelchair accessible, autonomous vehicle shuttle service to people who do not have transportation to access Contra Costa Regional Medical Center located in Martinez, CA. Data will be collected to develop safety performance measures.

PROJECT 3: PERSONAL MOBILITY ON I-680 CORRIDOR

This project will prepare the corridor for the future of Connected Automated Vehicles (CAV). It will install new and upgraded vehicle-to-vehicle infrastructure (V2I) and vehicle-to-vehicle (V2V), such as Dedicated Short Range Communications (DSRC) and 4G/5G communications, to accommodate both CAV technology and implementation of innovative operational strategies. The demonstration will integrate and operate highly-automated Level 3 and Level 4 vehicles on a two-mile segment of the I-680 freeway and adjacent arterials in Contra Costa County, CA.

PROJECT GOALS

- **Safety**: This project will take a multi-step approach toward testing and verifying the safety of ADS integration into on-road transportation systems.
- **Data sharing**: This project asks OEMs to commit to sharing their data for an effective safety study to enable a comprehensive and collaborative approach toward achieving program goals.
- **Collaboration**: This project will establish a collaborative environment and will form a relationship between private partners, universities, and local government, including engagement from U.S. DOT and NHTSA.

VEHICLE INFORMATION

PROJECT 1: ROSSMOOR FIRST MILE/LAST MILE SHARED AUTONOMOUS VEHICLE

This project will involve the use of Local Motors Olli shuttles. Olli is a self-driving, cognitive shuttle that uses IBM's Watson Technology, and is made in the United States. The Olli vehicles will be equipped with Verizon cellular vehicle-to-everything (C-V2X) technology, TrafficCast connected vehicle (CV) On Board Unit (OBU), and stand-alone data gathering devices customized by CCTA, AMG, AAA, UC Berkeley, and Automatic. This vehicle is non-complaint with FMVSS, and it is anticipated Local Motors will request an import exemption through Box 7 on the HS-7 importation forms. The applicant has stated they believe the vehicle to be compliant with Buy America and Buy American regulations, though they did not provide specific information about compliance.

PROJECT 2: COUNTY HOSPITAL ACCESSIBLE TRANSPORTATION

This project will involve the use of a 2019 Dodge Grand Caravan modified by BraunAbility for commercial/enterprise use and Buy America and Americans with Disabilities Act (ADA) compliance. The vehicles will be equipped with Intel Mobileye Advanced Driver Assistance Systems (ADAS) and ADS technology for driver assistance and self-driving capabilities, Verizon C-V2X technology, TrafficCast CV OBU, and stand-alone data gathering devices customized by CCTA, AMG, AAA, UC Berkeley, and Automatic. Based on the provided information, this vehicle is likely complaint with FMVSS. The applicant has stated they believe the vehicle to be compliant with Buy America and Buy American regulations, though they did not provide specific information about compliance.

PROJECT 3: PERSONAL MOBILITY ON I-680 CORRIDOR

A mixture of fleets will be used, and the majority of the vehicles will be equipped with Intel Mobileye technology. GoMentum Station existing partners, such as Honda, Uber, and Toyota, will join the demonstration on I-680 using their existing vehicles. EasyMile existing autonomous shuttles will also be used for testing on local roads and arterials near the freeway within the two-mile I-680 segment to continue to prove the first-mile/last-mile concept. Intel Mobileye will be installed on the new Ford Fusion Hybrid, new General Motors (GM) Chevrolet Bolt Electric Vehicle (EV), new GM Chevrolet Volt EV, and existing AAA/Gig Toyota Prius EV. EasyMile EZ10 or Local Motors Olli shared autonomous shuttles will operate on local roads and parking lots at Bishop Ranch during the demonstration. Vehicles will be equipped with Intel Mobileye and Verizon C-V2X technologies, the Commsignia CV OBU, and stand-alone data gathering devices customized by CCTA, AMG, AAA, UC Berkeley, and Automatic. GoMentum Station Original Equipment Manufacturer (OEM) partners may have their ADS systems installed on other vehicles and models at the time of the demonstration.

Based on the provided information, the vehicles proposed for this demonstration are likely compliant with FMVSS, except the EasyMile EZ10 or Local Motors Olli autonomous shuttles, which are non-compliant. It is anticipated the manufacturer(s) will request an exemption for these vehicles pursuant to 49 U.S.C. § 30113. The applicant has stated they believe all vehicles to be compliant with Buy America and Buy American regulations, though they did not provide specific information about compliance.
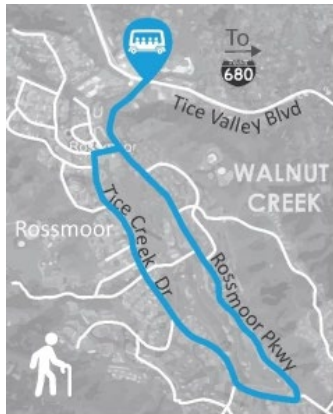
Project 1 will occur on a loop near the Rossmoor senior community.

Project 2 will occur in an area near the Contra Costa Regional Medical Center.

Project 3 will occur on a two-mile stretch of I-680 near Bishop Ranch.

DATA COLLECTION, MANAGEMENT, & SHARING

Project reports and technical documents will be stored on SharePoint Online on Microsoft Azure 365 Cloud. Real-time data and historical data gathered from V2X and on-board vehicle devices will be stored on the Verizon City Data Insights Platform, which leverages Amazon Web Services Cloud. Real-time data and historical data gathered from infrastructure and devices along the freeway and arterials will be stored on Telegra local storage servers located at a local data center/traffic management center. All findings and reports will be available publicly, and the public will have access to the anonymized and aggregated data, including summarized real-time and archived information.

Data will be collected by on-board data gathering devices placed on vehicles to collect real-time data. Real-time data will be collected from CAVs equipped with DSRC-based or Cellular-based OBU that communicates with traffic signals through V2I and other near-by vehicles through V2V and/or everything through V2X for detection of other moving objects. Data will also be gathered from the roadway sensors, vehicle detection radars, and video detection cameras to detect and record data.

PROJECT STATUS & SCHEDULE

The project has a four-year timeline, scheduled to conclude at the end of 2023.
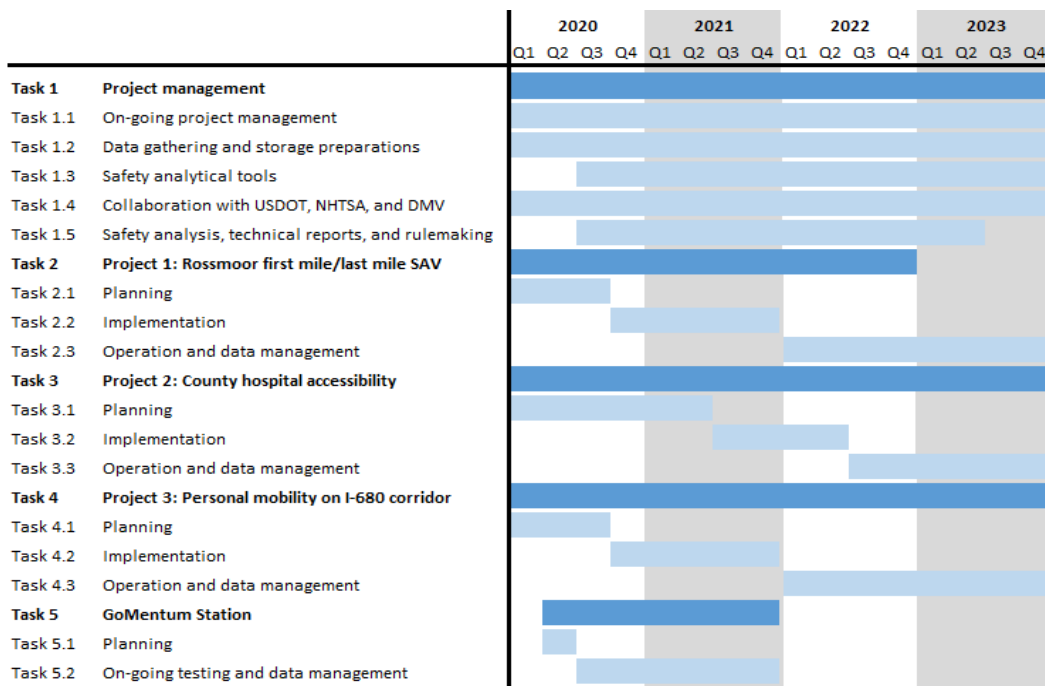
BUDGET

USDOT Grant Funding	Non-Federal Cost Share	Total Amount
$7,500,000	$19,822,948	$27,322,948