

California Connected Vehicle Test Bed

The California Department of Transportation (Caltrans), the San Francisco Bay Area's Metropolitan Transportation Commission (MTC), and the University of California PATH Program have developed a partnership as leaders in research and testing of connected vehicle (CV) technology. California's involvement in CV research and testing dates to 2005 when the nation's first ever state-funded CV testbed was established on State Route 82 (a.k.a., El Camino Real) in Palo Alto, CA. In addition, Caltrans has been an active member of the CV Pooled Fund Study (CV PFS), a group of state and local transportation agencies focused on preparing for the deployment of connected vehicle infrastructure. One of the more high-profile CV PFS projects, the development and field testing of a Multi-Modal Intelligent Traffic Signal System (MMITSS) for next generation traffic signal control in a CV environment, was successfully demonstrated on California's CV Testbed in 2015. This demonstration is noteworthy since it involved the integration of MMITSS software and Cellular Vehicle-to-Everything (C-V2X) communications technology into Caltrans-operated traffic signal controllers in a live traffic environment. Further, MMITSS demonstrated the potential to improve traffic operations along the arterial through better signal timing, reduced idling and offering safer conditions for pedestrians and cyclists.

As it is illustrated in Figure 1, the California CV Test Bed is about seven (7) miles long and consists of thirty-one (31) signalized intersections (blue pins) and six (6) High-Intensity Activated Crosswalk (HAWK) signals (red pins). All will be equipped and operated using C-V2X roadside units (RSUs). The test bed will be continuing to serve as a live CV environment for the development and test of CV applications that can improve safety and mobility.

The U.S. Department of Transportation (US DOT) provided financial and technical support to Caltrans and PATH for upgrading the test bed to be compliant with emerging national CV standards that adhere to FCC regulations. In order to continue testing and researching CV technologies and use cases, 37 new licenses must be obtained to enable the RSU's in question to resume operation and testing. It is imperative that licenses are secured to continue progress in this emerging field.

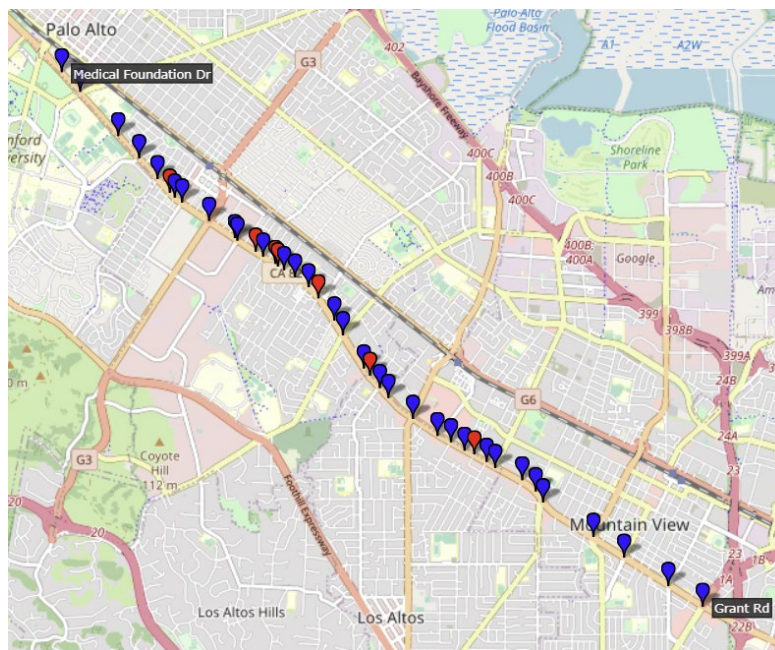


Figure 1 California Connected Vehicle Test Bed