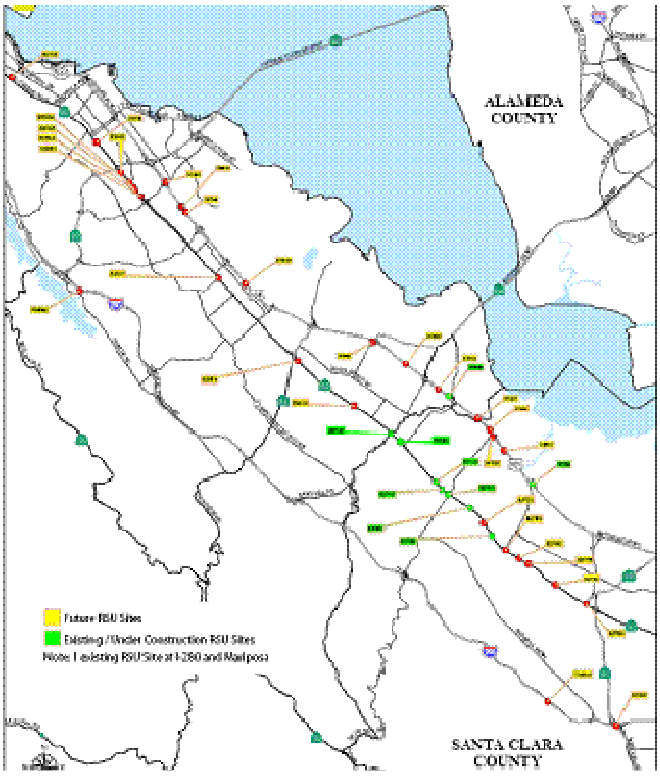
VII California: Update, Progress and Roadway Applications

The *VII California* testbed and proof of concept development is a joint Metropolitan Transportation Commission (MTC), Caltrans, DaimlerChrysler Research, Engineering and Design North America, Toyota InfoTechnology Center, and Volkswagen of America Electronics Research Laboratory activity. TheCalifornia Partners for Advanced Transit and Highways (located at University of California, Berkeley) is working with Caltrans on the infrastructure (roadside unit) implementation and vehicle-infrastructure messaging and communication of the VII data, whereas Telvent Farradyne is working with MTC on backhaul communications and collection, processing and archiving of data at the center.

The *VII California* testbed effort is a large-scale testbed extending approximately 60 miles of roadway (freeways and arterials), and is a significant collaborative effort The *VII California* testbed is expanding. The expansion is multi-fold: in a network of DSRC roadside units (with 12 at this writing and plans form up to 40), applications with on-board equipment (on light duty and transit vehicles), and a leveraged, established backhaul network (with heterogeneous backlinks, T1 wireline, 3G modem and coming online, WiMax).



VII California Testbed: Current and Future Roadside Unit Installations

For *VII California* Caltrans and MTC have identified the following public sector VII use cases as being of priority interest for proof of concept testing:

1. **Traveler Information**
2. **Ramp**
3. **Electronic Payment (Tolling)**
4. **Intersection Safety**
5. **Curve Overspeed Warning**
6. **OEM Specific Applications**

Caltrans and MTC are also supportive of using the testbed to conduct proof of concept tests for commercial applications that are developed and provided by individual automobile companies or other private sector organizations.

Recent and present work included:

- Establishment of a "sniffer" working with a 170-type controller (and conceivably with any controller), combined with a message set, that provides wireless (DSRC) signal state information to approaching, equipped cars (Page Mill Rd and SR 82, El Camino Real)
- Installation of a 2070-type controller interface to provide signal state information via DSRC link directly from controller-to-computer-to-radio roadside equipment, in support of the Federal Cooperative Intersection Collision Avoidance Systems – Violation project (5th Av and SR 82)
- In an OEM-academia collaboration, development of curve overspeed warning system with an accident-prone, tight on- and off-ramp (US 101 and Marsh Rd.)
- Scalable channel switching experiments by saturating an intersection with DSRC transceivers
- Integrated probe (with light duty passenger vehicles traveling on arterials), 511 (from the existing 511.org ETC-based probe data), in-vehicle signage, transit signal priority and signal sniffing experiment to a bus platform.
- Use of emerging SAE J2739 standard for large scale probe simulations.
- Plans for real-world VII tolling and probe vehicle applications, leveraging infrastructure in the SF Bay Area.

VII California will continue up to and through deployment, should research results point toward that. This effort is dynamic and ongoing, as partners and applications are being sought, with research results and, ultimately, a deployment framework is being developed. We anticipate a bright, sustained future.