

Connected Vehicle and Autonomous Vehicle (CV/AV) Mobility and Technology

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WHO WE ARE

- The Contra Costa Transportation Authority (CCTA) is a public agency formed by Contra Costa voters in 1988 to manage the county's transportation sales tax program and to lead the county's transportation planning efforts.
- CCTA is responsible for maintaining and improving the county's transportation system by planning, funding, and delivering critical transportation infrastructure projects and programs that connect our communities, foster a strong economy, increase sustainability, and safely and efficiently get people where they need to go.



MEASURE C

- Passed by voters in 1988, Measure C provided for a half-cent on the dollar sales tax for twenty years (through March 2009) to pay for an ambitious list of transportation projects and programs.
- Measure C was estimated to generate \$1 billion over 20 years for a BART extension, freeway improvements, better bus service, enhanced bicycle facilities and more transportation options for senior citizens and people with disabilities.



MEASURE J

- In November 2004, 71% of Contra Costa voters approved Measure J. The measure provided for the continuation of our county's half-cent transportation sales tax until 2034, and will provide approximately \$2.0 billion for countywide and local transportation projects and programs for the life of the measure.



WHAT WE DO

- **BUSES-** Invest in a reliable, comfortable and convenient bus network
- **LOCAL STREETS-** Smooth traffic flow on major roads and invest in neighborhood improvements such as repairing potholes and road surfaces
- **PEDESTRIAN** - Make improvements to sidewalks, crosswalks, trails, and paths
- **SAFE ROUTES TO SCHOOLS-** Focus on programs and projects aimed at bicycle and pedestrian safety for K-12 students
- **FERRIES-** Expand the Bay Area ferry system by looking to ferries as an alternate commute method between West County and San Francisco



- **BICYCLE-** Invest in safe routes and infrastructure improvements for bicyclists



- **BART-** Make improvements to BART service and stations, such as extensions to new routes and parking at stations



- **HIGHWAYS-** Complete Contra Costa's highway system, and improve air quality and noise protection along these corridors



- **CARPPOOL/RIDESHARE-** Implement programs aimed at reducing traffic congestion by encouraging carpooling and ridesharing



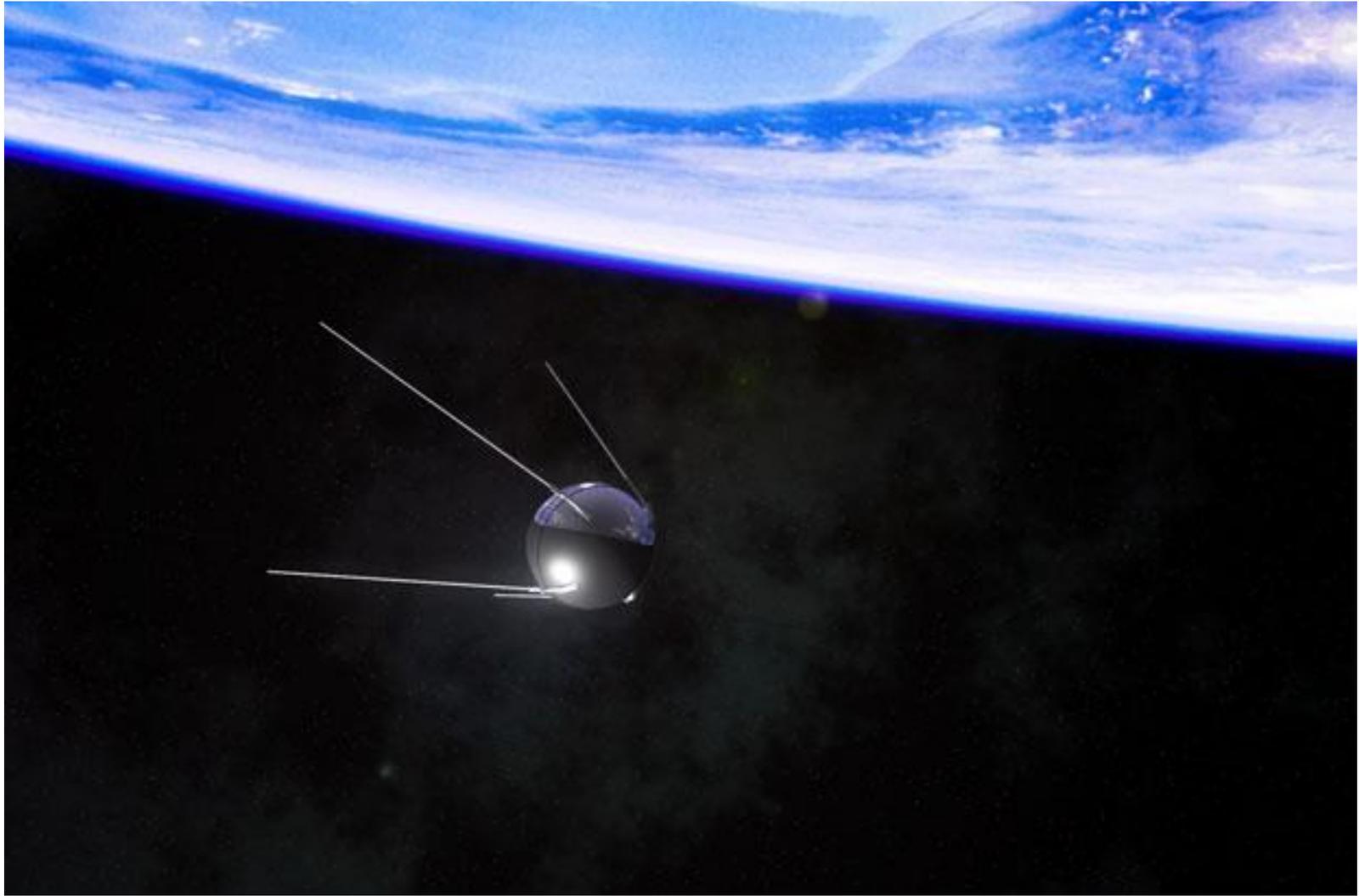
- **PROGRAMS FOR SENIORS AND PEOPLE WITH DISABILITIES-** Enhance transit options to improve mobility for seniors and people with disabilities

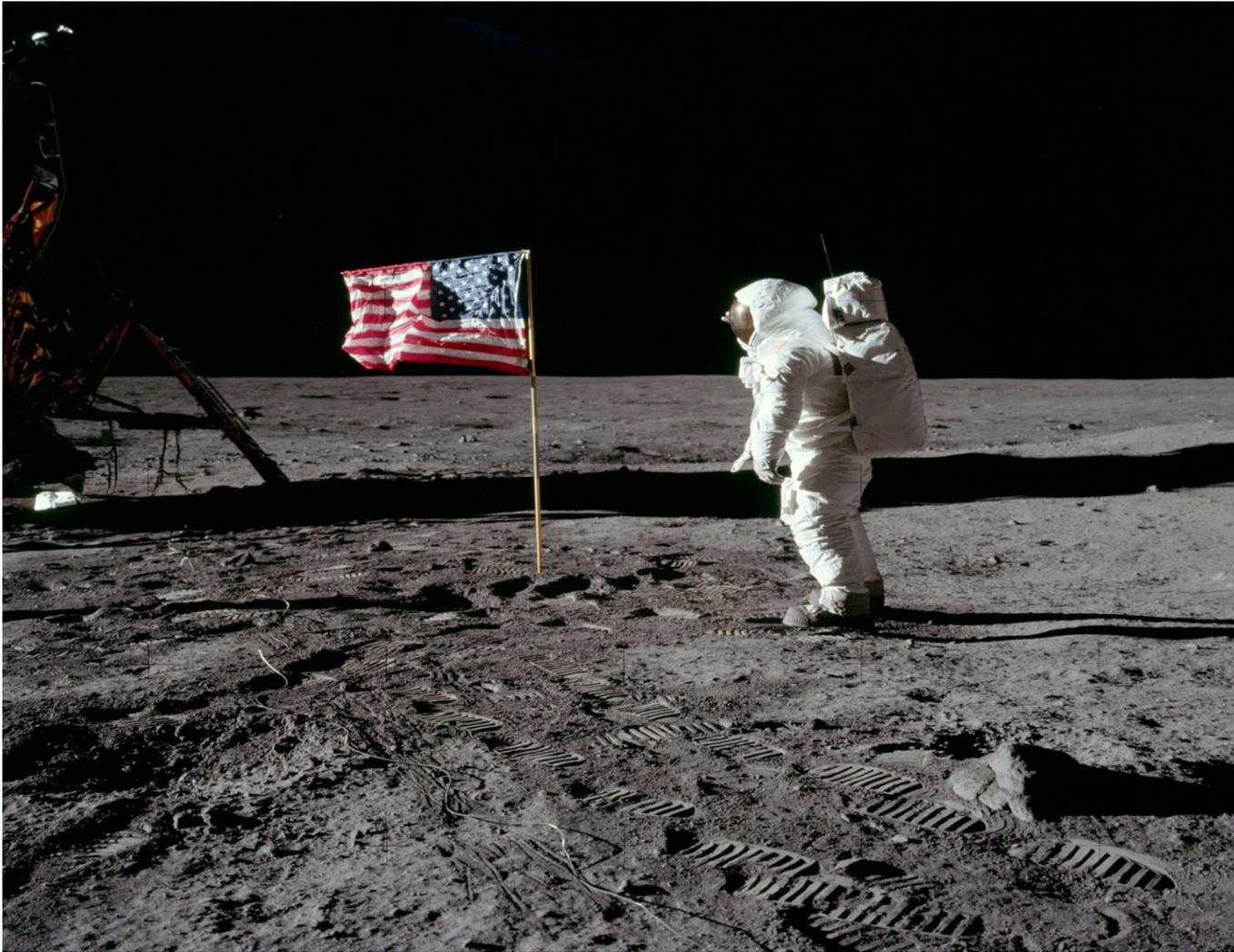




A little bit of history







1964 World's Fair Futurama

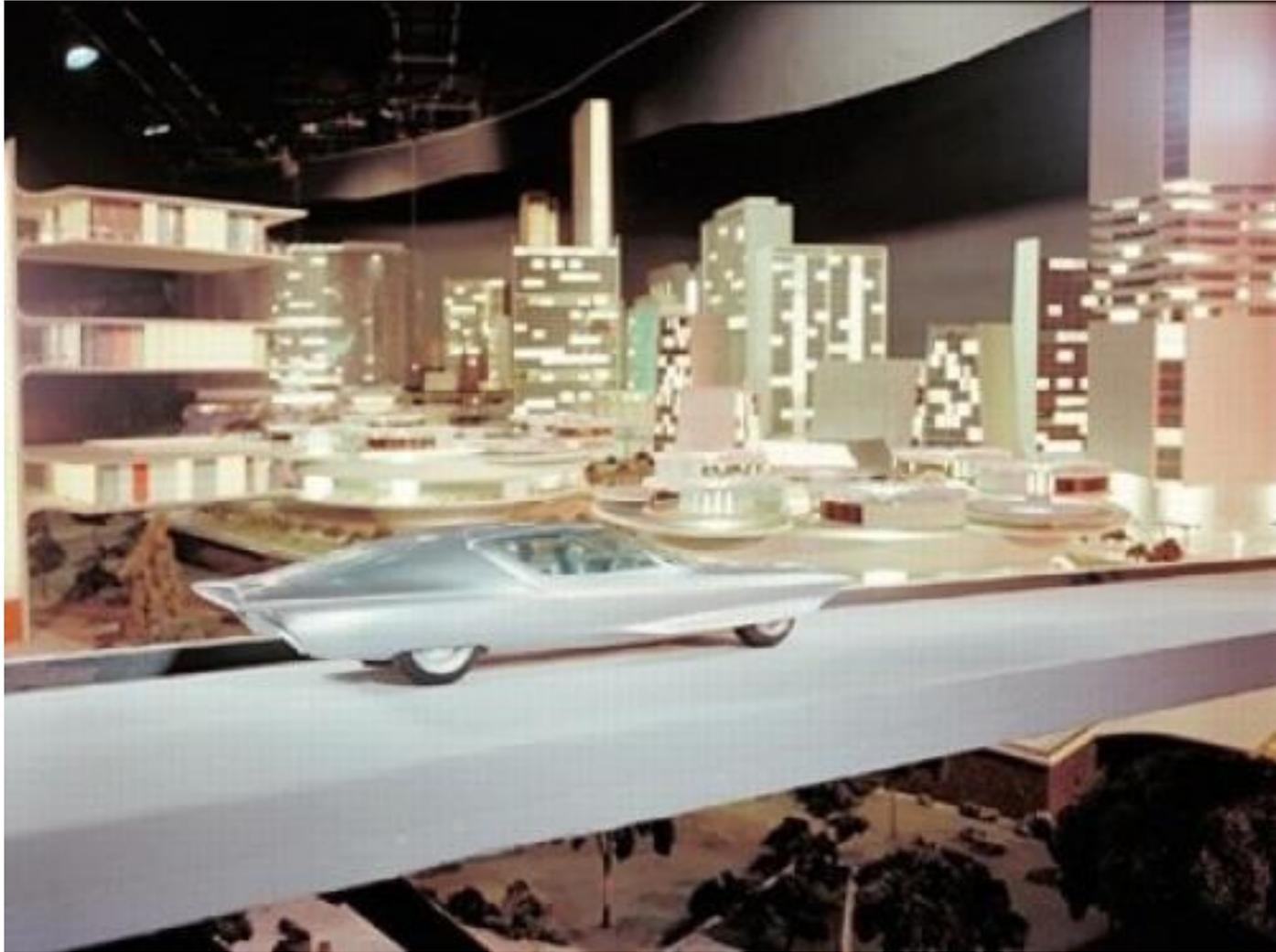


1939 World's Fair Futurama

TOMORROW-LAND

High spot of the New York World's Fair reopening this Spring—GM Futurama!

You can look over GM's exciting "idea" cars—*Firebird IV* with television, stereo, game table, refrigerator; *GM-X* with jet aircraft cockpit and controls—fascinating design and engineering innovations right out of tomorrow.





California PATH



How cities have evolved









Data Driven Mobility

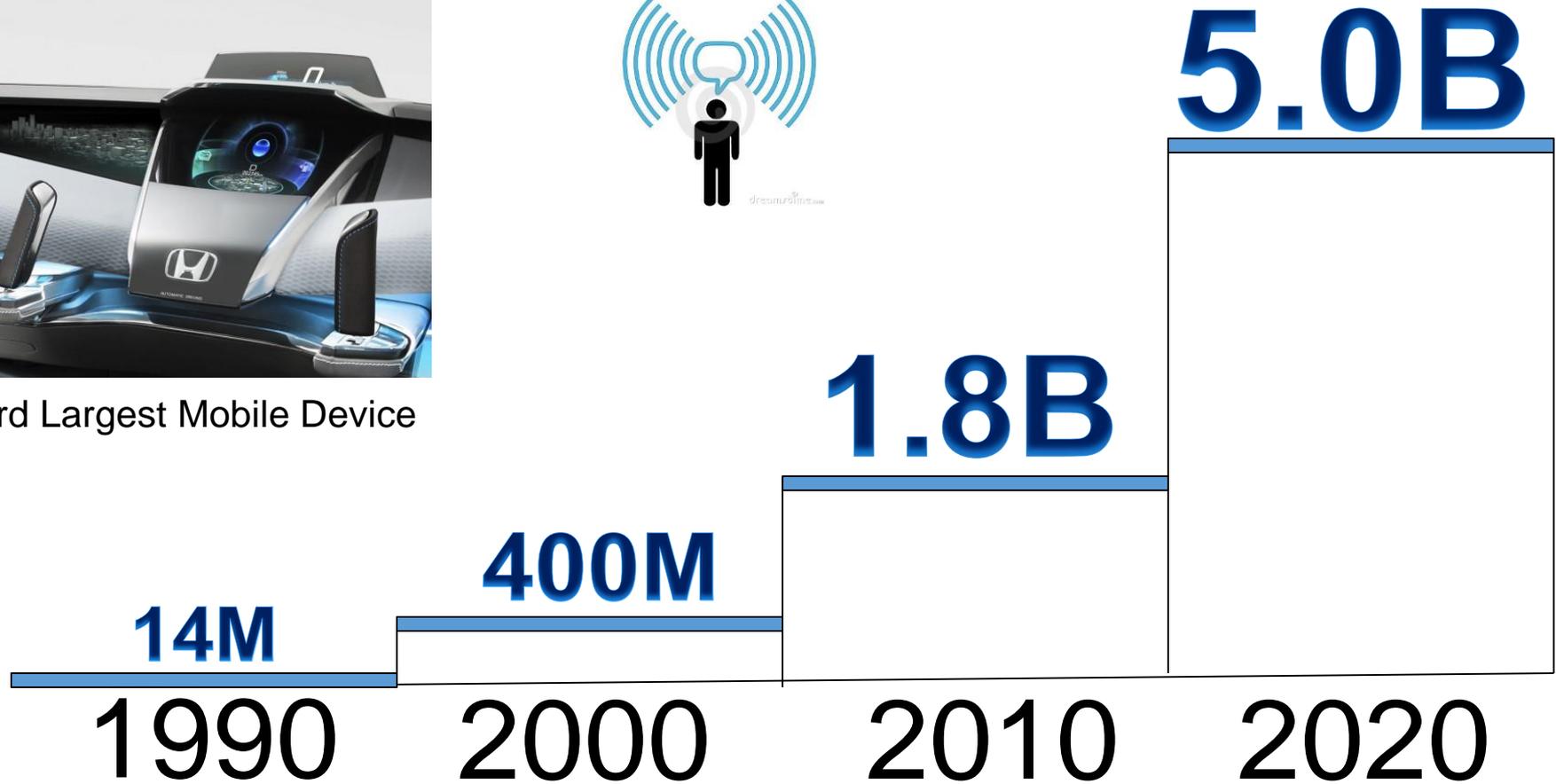
Sensible & Digital City

Intermodal Innovations





Third Largest Mobile Device



Source: <http://www.internetlivestats.com/internet-users/#trend>



International Business Machines Corporation (IBM) ★ Watchlist

157.81 -2.96 (-1.84%) NYSE - As of 4:02PM EDT

After Hours: **157.81** ↑+0.49 (0.31%) 05:51pm EDT

1d 5d 1m 3m 6m YTD 1y 2y 5y 10y Max Custom ▾ + Indicator + Comparison Reset Go To Symbol



30 YEARS



International Business Machines Corporation (IBM) ★ Watchlist

157.81 -2.96 (-1.84%) NYSE - As of 4:02PM EDT

After Hours: **157.81** ↑+0.49 (0.31%) 05:51pm EDT

1d 5d 1m 3m 6m YTD 1y 2y 5y 10y Max Custom ▾ + Indicator + Comparison Reset Go To Symbol



Facebook, Inc. (FB) ★ Watchlist

77.55 -1.89 (-2.38%) NASDAQ - As of 4:00PM EDT

After Hours: 77.59 ↑+0.04 (0.05%) 6:03PM EDT

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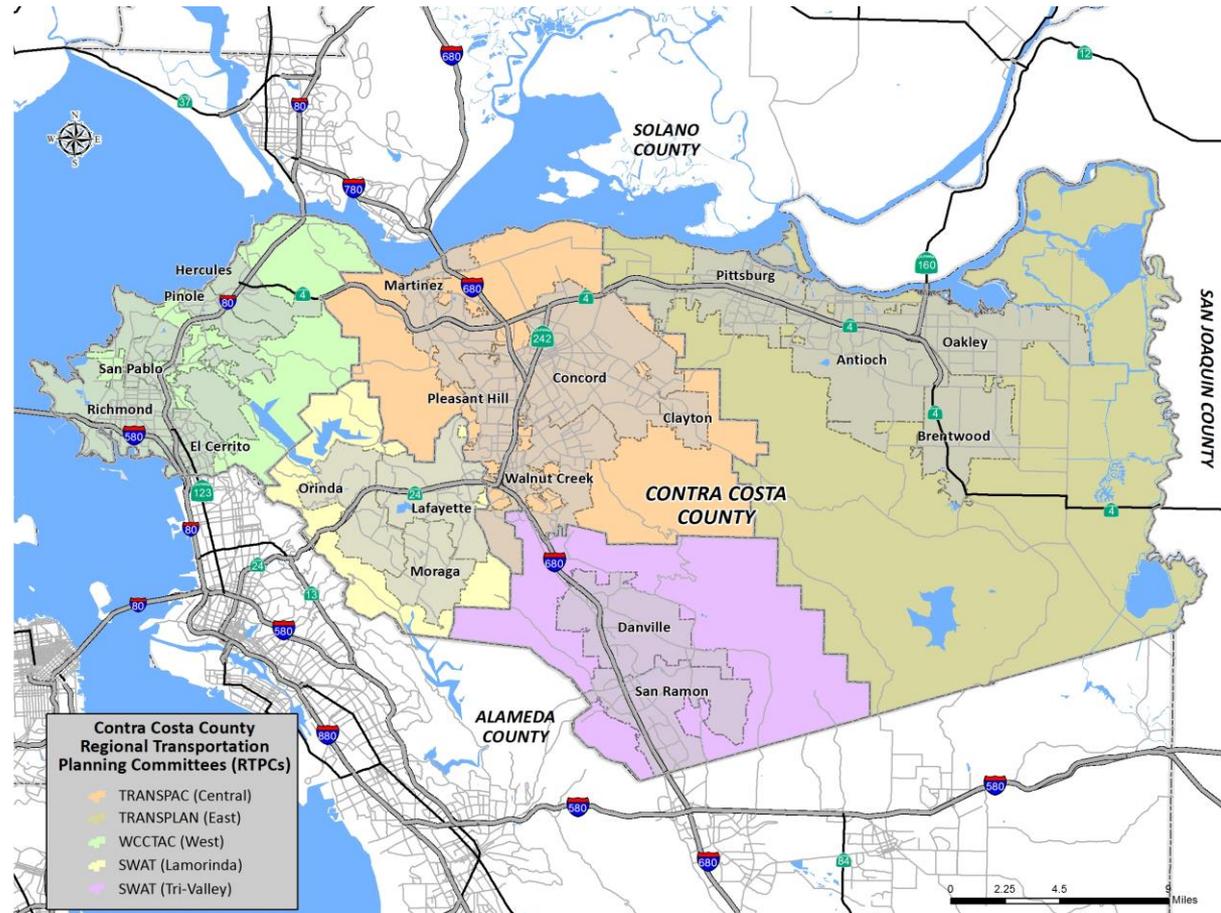


Transportation Planning



Regional Transportation Planning Committees

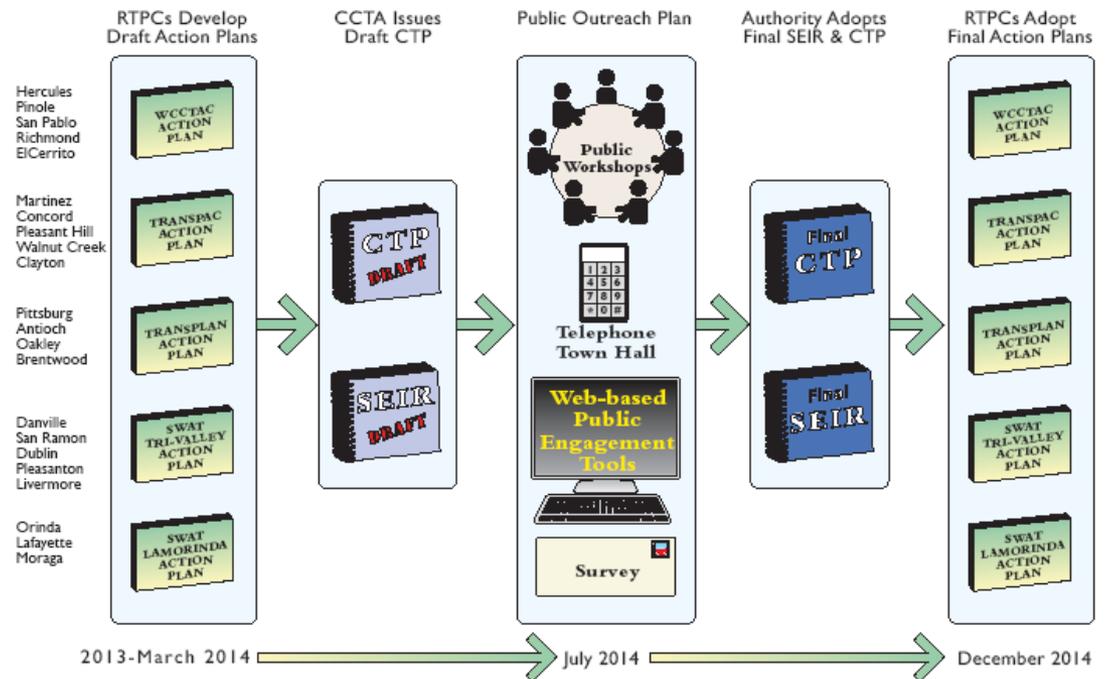
- Four Distinct Sub-regions
- Responsible for prioritizing local projects and programs
- Develop Action Plans for Routes of Regional Significance



Long Range Planning – The Countywide Transportation Plan

- Updated Every 4-5 Years
- Documents the Authority's Goals, Vision, and Strategies
- Action Plans are Developed by the Regional Committees
- Includes 10- and 20-Year Financially Constrained Project Lists

Figure I-2: CTP Development & Adoption Process





Technology Projects



I-80, SR-4 ICM/ATM



CV/AV



Connected Shared Autonomous Vehicle



Charging Station

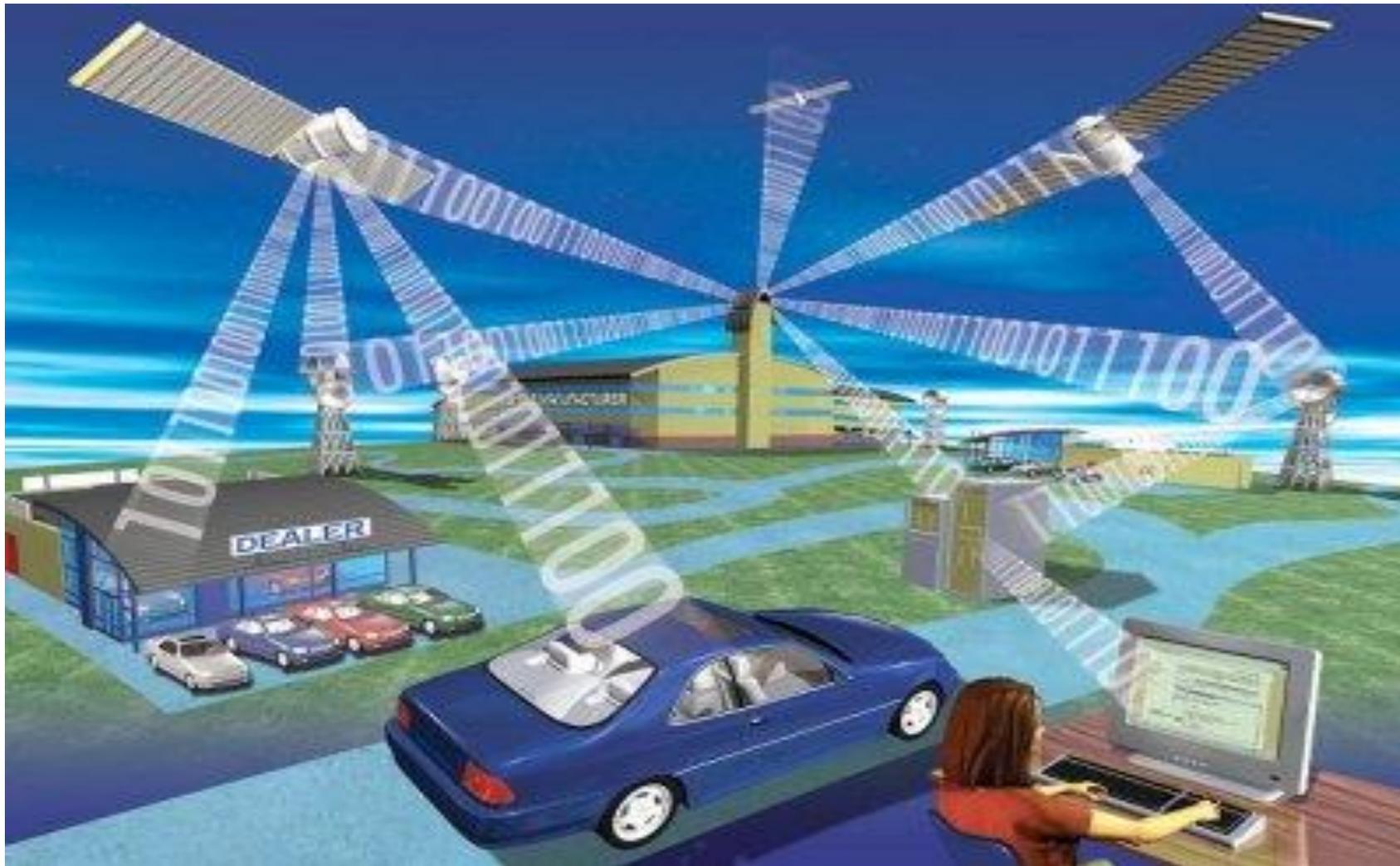
SMART MOBILITY @ CCTA



DSRC



Vehicle to Infrastructure





Platooning



Pacheco Transit Hub Parker App – Streetline



MARTINEZ

MONTHLY REPORT

NOV. 30, 2014 – JAN. 3, 2015

KEY FACTS

No. of Sensors: 102 General /
6 EV / 6 ADA /
Area(s): Pacheco Lot

60% Avg. Occupancy

7.5 Avg. Duration (hrs.)

Mon. Peak Occupancy Day (71%)

9am Peak Occupancy Hour (62%)

8am Peak Arrival Hour (24 cars/day)

1,389 Parking Sessions

*Note(s): Metrics are calculated Monday-Friday,
between 6am-2pm for General spaces only.*

DEPLOYMENT MAP



Integrated Dynamic Transit Operations System

- Dynamic Dispatch
- Connection Protection
- Dynamic Ridesharing





Prototype

Introducing the GoMentum Station Program

Connected Vehicle and Autonomous Vehicle
(CV/AV) Program and Test Facility

Overarching Goals

**Economic
Growth & Job
Creation**

**Efficient
Mobility**

**21st Century
Transportation**

**Enhanced
Safety**

**Healthier
Environment**



More than 5,000 acres with 2,100 acres currently available for testing

- **AV's could free as much as 50 minutes a day for users**
- **Potential for generating global digital-media revenues of \$5 billion/year for every additional minute on internet**

McKinsey and Company

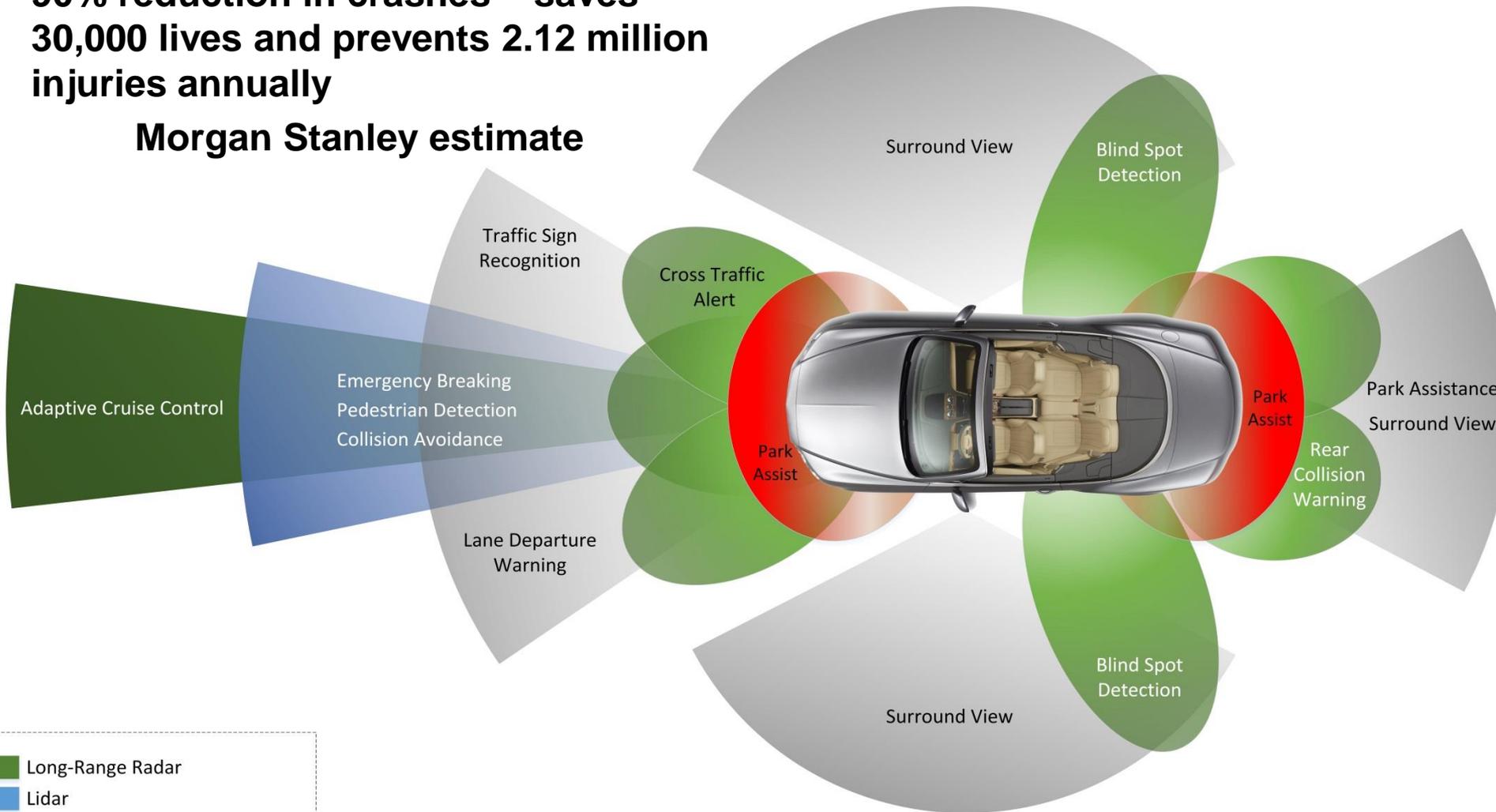


- Parking becomes easier
- Pay-per-use models
- Increased throughput



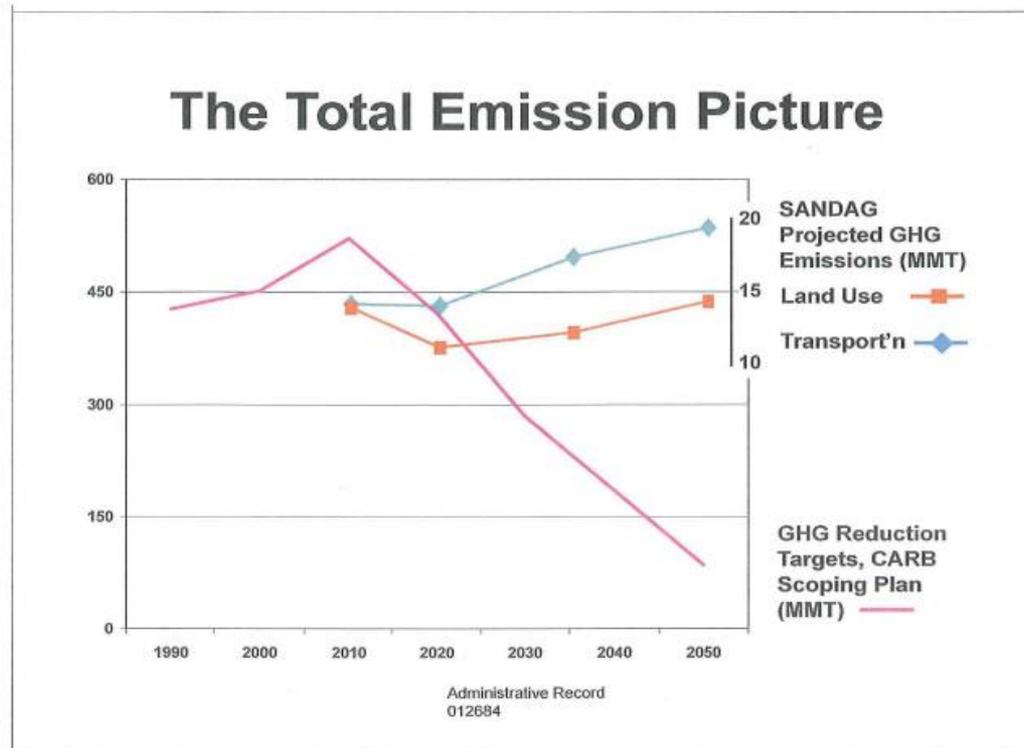
- **90% reduction in crashes – saves 30,000 lives and prevents 2.12 million injuries annually**

Morgan Stanley estimate



■	Long-Range Radar
■	Lidar
■	Camera
■	Short/Medium Range Radar
■	Ultrasound

Climate Change and Transportation



10-28-11 SANDAG Meeting Materials: Slideshow Presentation on Large Majority of Californians Support Implementation of Climate Change Laws (AR 185:12684)



- **Alternative fuels**
- **Reduced fuel consumption: 10% on rear truck, 4.5% on front truck - Peloton**

www.sceeri.com



**Over 5000 acres with
2100 acres available
for testing**

Over 20 miles of paved roadways including a 7-mile long spine road for high speed testing



Two 1400-ft. long tunnels ideal for testing guidance, sensors & communications technologies



Freeway underpasses and variable roadway geometrics



Several parking lots for testing by multiple users





SDV

Shared Driverless Vehicles



Shared Driverless Vehicle (SDV)



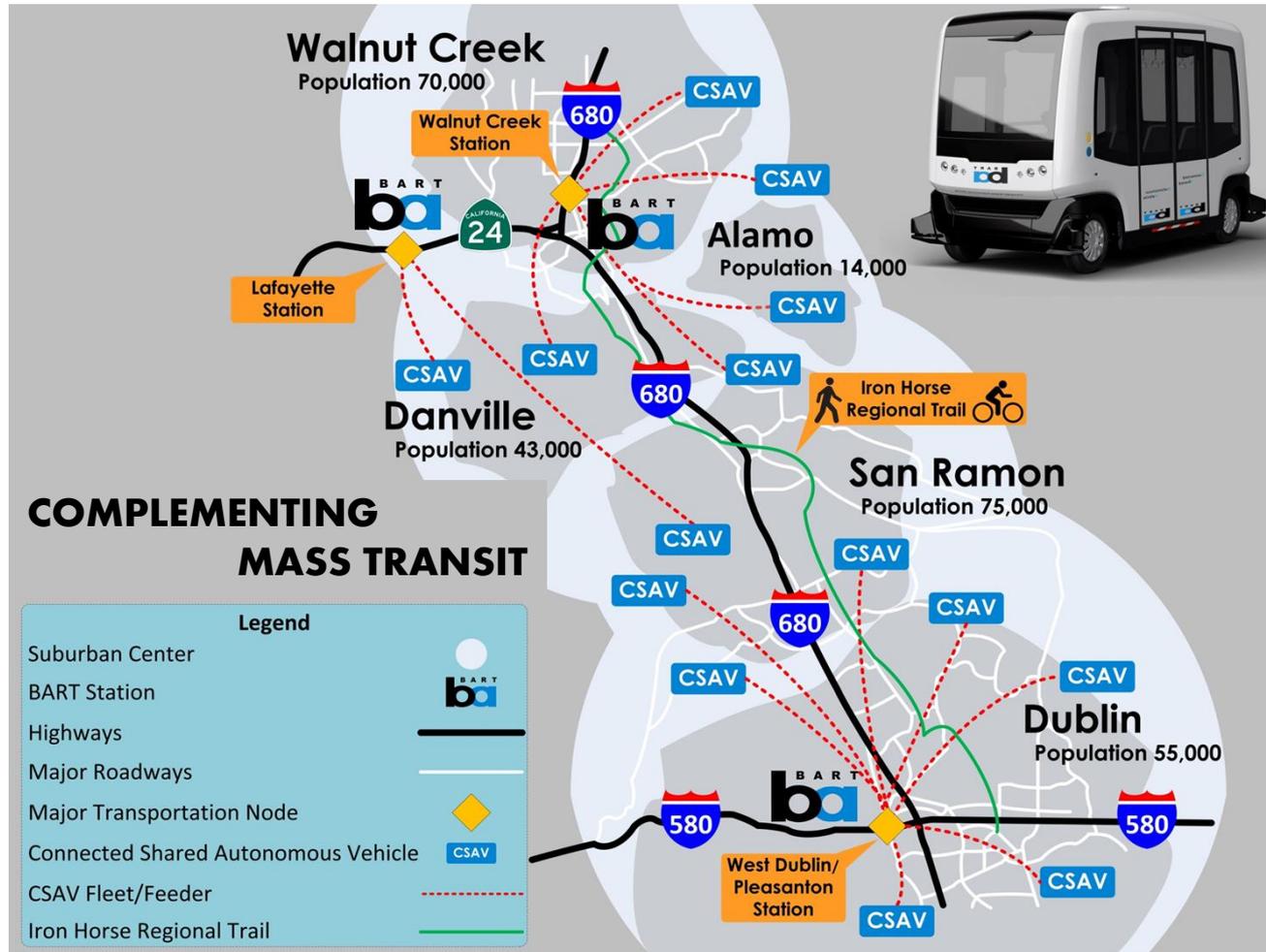
GoMentum Station and EasyMile announce exclusive agreement to launch Shared Driverless Vehicles in North America

First Deployment after testing at GoMentum Station will be Bishop Ranch



Autonomous Transit

- Autonomous 12-passenger vans serving as shuttles to BART and other destinations
- Testing to begin at Bishop Ranch business park



How to prepare for the future!

- Education & Outreach
- Planning Process
- Engagement
- Flexibility
- Leverage
- Consistency

Thank you!

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