



**METROPOLITAN  
TRANSPORTATION  
COMMISSION**

# **PROGRAM FOR ARTERIAL SYSTEM SYNCHRONIZATION (PASS)**

## **FY 16/17 CYCLE**

## **FACT SHEETS**

MTC Contact:

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PASS Program Manager

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# PASS FY2016/17 Cycle Program Summary

#	County	Project Sponsors	# of Traffic Signals	Timing Plans/Services	Project Consultant
1	CC	City of Antioch, Caltrans	23	Weekday Peaks	TJKM Transportation Consultants
2	MR	Town of Corte Madera, Caltrans	9	Weekday / Weekend Peaks	Kimley-Horn and Associates, Inc.
3	AL	City of Fremont, Caltrans	36	Weekday / School / Weekend Peaks	DKS Associates
4	AL	City of Livermore, Caltrans	42	Weekday Peaks; TSP Timing	Kimley-Horn and Associates, Inc.
5	CC	City of Oakley	11	Weekday / School Peaks	TJKM Transportation Consultants
6	AL	City of Pleasanton	47	Weekday Peak; Incident Management Flush Plans	Kimley-Horn and Associates, Inc.
7	SC	City of San Jose	48	Weekday / Weekend Peaks; TSP Timing	Iteris, Inc.
8	SM	City of San Mateo, Caltrans	29	Weekday Peaks	TJKM Transportation Consultants
9	SC	City of Santa Clara, Caltrans	12	Weekday / Weekend Peaks	Iteris, Inc.
10	SN	City of Santa Rosa, Caltrans	15	Weekday / School Peaks	TJKM Transportation Consultants
Total Signals			272		

Note: AL = Alameda, CC = Contra Costa, MR = Marin, SC = Santa Clara, SM = San Mateo, SN = Sonoma

## Benefit/Cost Summary\*:

**Total Lifetime Benefits: \$52,337,330**


**Total Program Costs: \$1,141,430**

**Overall Program Benefit/Cost Ratio: 46:1**


\*The Program benefits are assumed to be 100% on the first day after implementation of the new timing plans, declining steadily to zero by the end of the fourth year.

## LIFETIME (5 YRS) PROGRAM BENEFITS:

 Auto Travel Time Savings: 19% (1.8 million hrs.)

 Average Increase in Auto Speed: 23%

 Fuel Consumption Savings: 16% (4.7 million gal.)

 Total Emissions Reduced: 239 tons:  
(ROG, NOx, PM2.5, CO)



# City of Antioch | Caltrans



## PROJECT SUMMARY:

### Corridors:

- Hillcrest Avenue
- Deer Valley Road

### Number of Signals: 23

- 20 (operated and maintained by City of Antioch)
- 3 (operated and maintained by Caltrans)

### Scenarios:

- Weekday AM and PM peak periods

### Number of GPS Clocks: 3 (for time-based coordination)

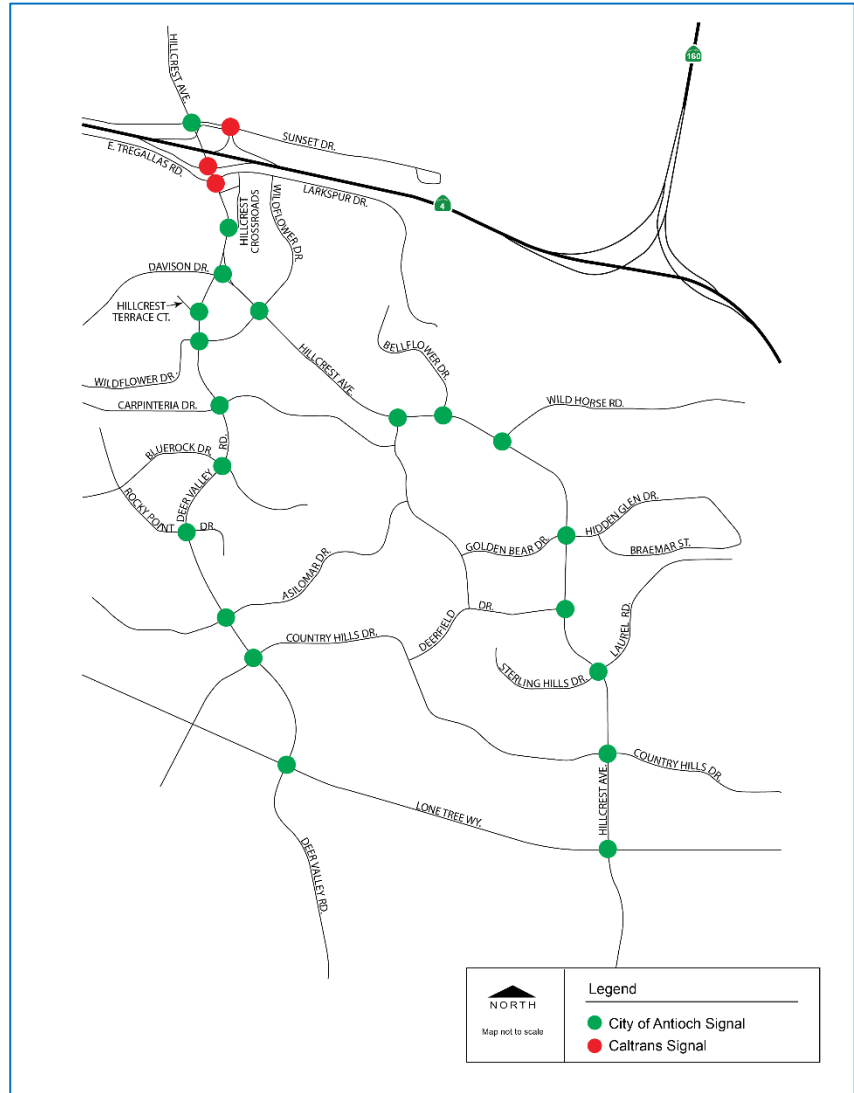
## AGENCY CONTACT:

Lynne Filson (City of Antioch)

Assistant City Engineer

Phone: 925.779.7025

Email: [lfilson@ci.antioch.ca.us](mailto:lfilson@ci.antioch.ca.us)



# City of Antioch | Caltrans (cont'd)

**Total Lifetime Benefits: \$2,926,720**  
**Total Project Costs: \$73,680**  
**Overall Project Benefit/Cost Ratio: 40:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 17% (99,700 hrs)



Average Reduction in Auto Signal Delay: 50%  
Average Reduction in Number of Stops: 45%



Fuel Consumption Savings: 15% (277,900 gal.)



Total Emissions Reduced: 15.4 tons:  
(ROG, NO<sub>x</sub>, PM<sub>2.5</sub>, CO)

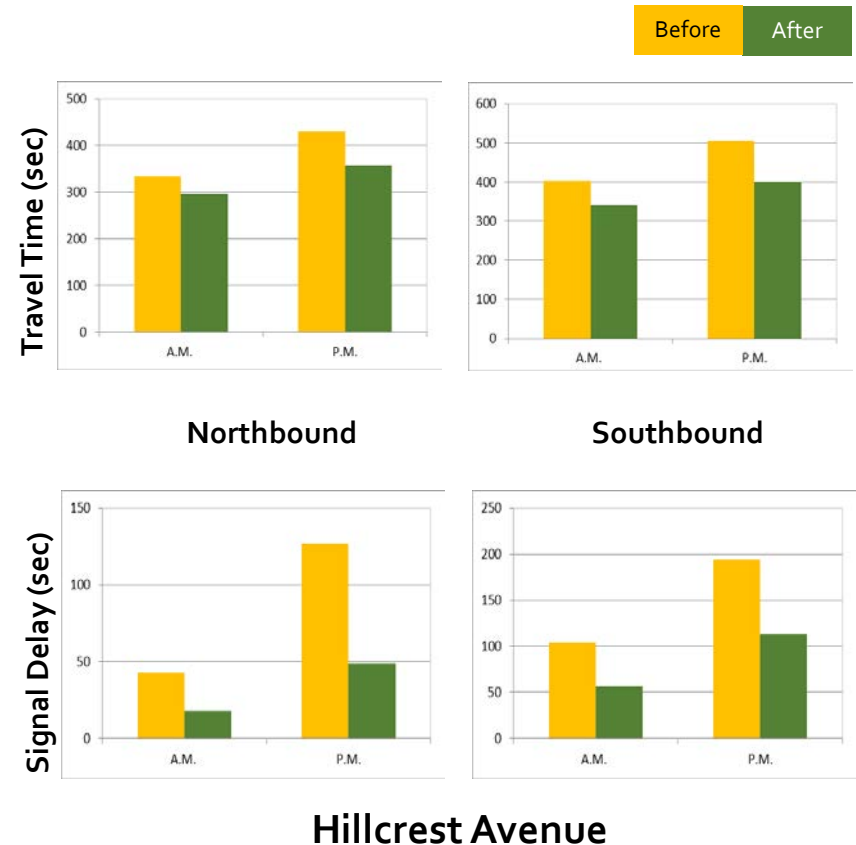
## ADDITIONAL BENEFITS:

### Traffic Safety

- The yellow clearance timing parameters were updated based on posted speed limit and speed surveys wherever applicable along the study corridors.

### Pedestrians

- The "Walk" timing and "Flash Don't Walk" clearance timing parameters were updated to provide adequate time for pedestrians to safely cross the intersections, based on the new walking speed of 3.5 feet/second, as specified in 2014 California MUTCD standards.





# Town of Corte Madera | Caltrans



## PROJECT SUMMARY:

### Corridors:

- Tamalpais Drive/Redwood Highway
- Tamal Vista Boulevard
- Wornum Drive

### Number of Signals: 9

- 7 (operated and maintained by Town of Corte Madera)
- 2 (operated and maintained by Caltrans)

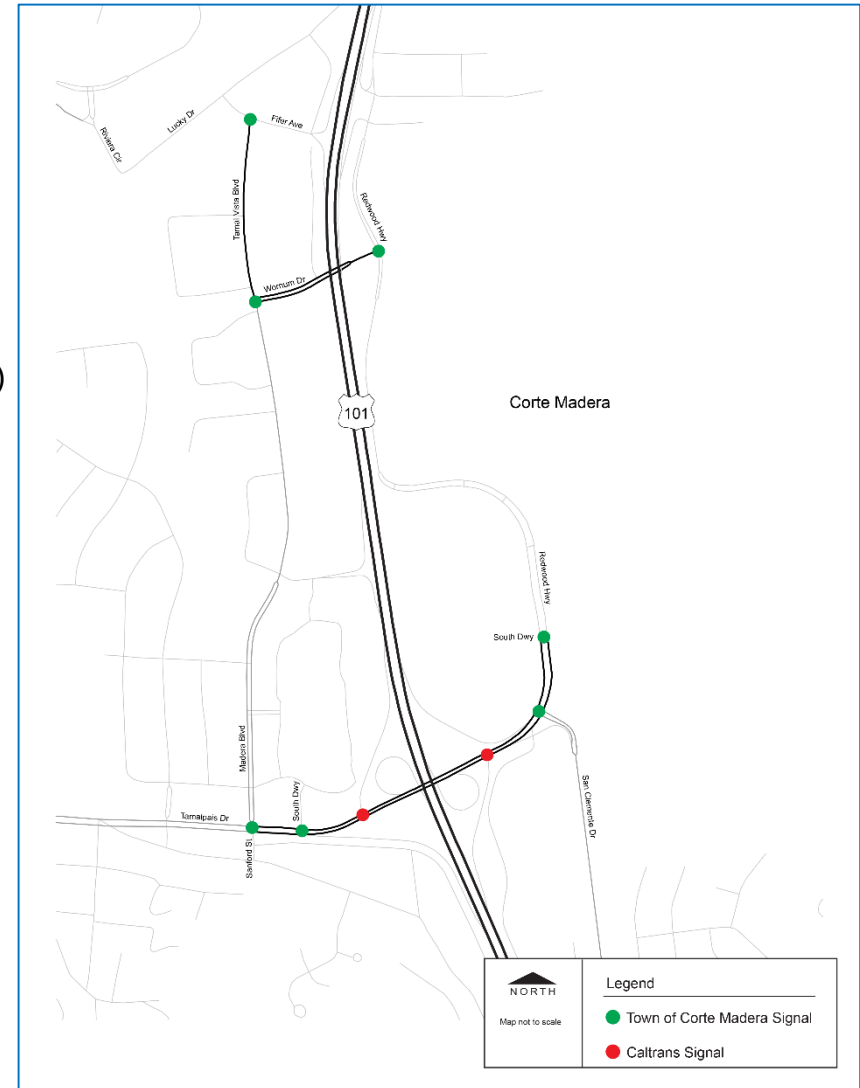
### Scenarios:

- Weekday AM, Midday and PM peak periods
- Weekend Midday and PM peak periods

**Number of GPS Clocks: 9**  
(for time-based coordination)

## AGENCY CONTACT:

Nisha Patel (Town of Corte Madera)  
Assistant City Engineer  
Phone: 415.927.5120  
Email: npatel@tcmmail.org



# Town of Corte Madera | Caltrans (cont'd)

**Total Lifetime Benefits: \$734,460**  
**Total Project Costs: \$55,650**  
**Overall Project Benefit/Cost Ratio: 13:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 17% (27,800 hrs)



Average Reduction in Auto Signal Delay: 28%  
 Average Reduction in Number of Stops: 15%



Fuel Consumption Savings: 13% (48,700 gal.)



Total Emissions Reduced: 2.2 tons:  
 (ROG, NOx, PM2.5, CO)

## ADDITIONAL BENEFITS:

### Pedestrians

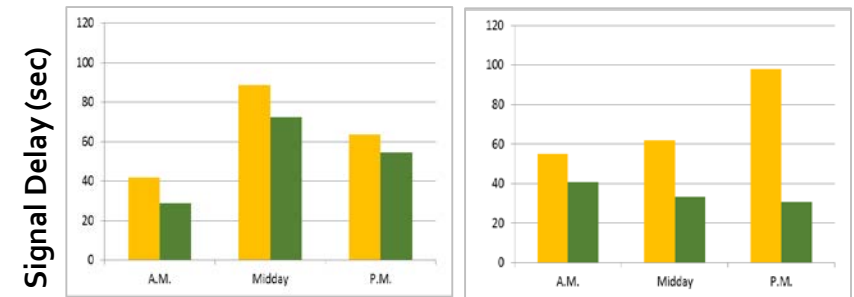
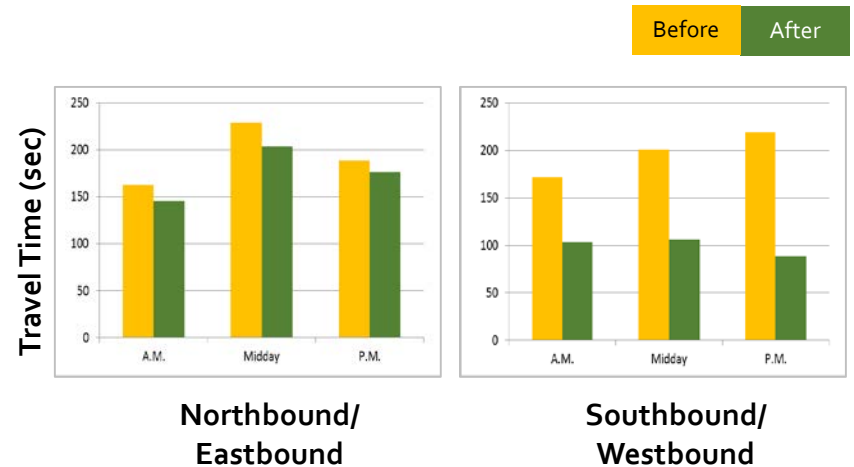
- Pedestrian clearance intervals were reviewed and increased at two intersections based on current 2014 California MUTCD standards. Despite the increase in pedestrian intervals, travel time benefits were achieved along the corridors.

### Transit

- It is expected that improved traffic flow and reduction in congestion along Tamalpais Drive will result in reduction of transit travel times for the transit routes operating along this corridor.

### Traffic Safety

- The yellow clearance timing parameters were updated based on posted speed limit and speed surveys wherever applicable along the study corridors.



## Tamalpais Dr/Redwood Hwy, Tamal Vista Blvd

## PROJECT SUMMARY:

### Corridors:

- Fremont Boulevard
- Washington Boulevard
- Warm Springs Boulevard/Osgood Road

### Number of Signals: 36

- 32 (operated and maintained by City of Fremont)
- 4 (operated and maintained by Caltrans)

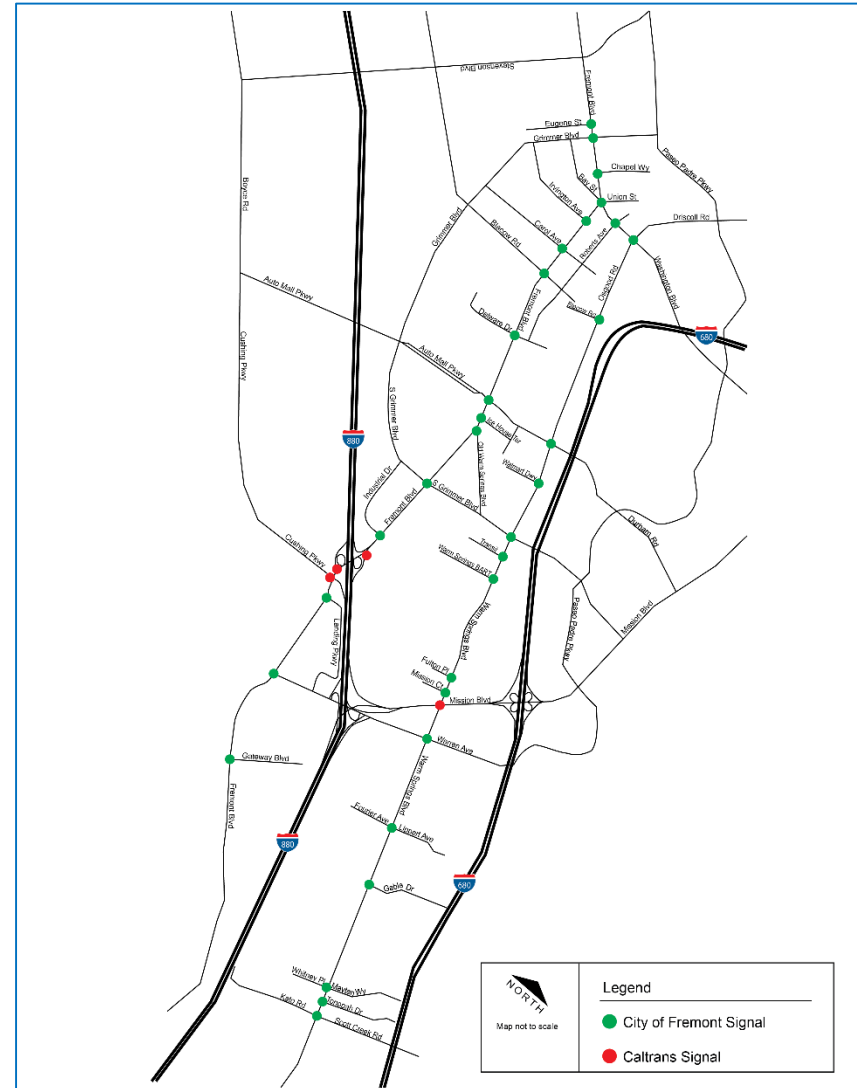
### Scenarios:

- Weekday AM, Midday and PM peak periods
- Weekday School PM period
- Weekend PM peak period

**Number of GPS Clocks: 4**  
(for time-based coordination)

## AGENCY CONTACT:

Donya Amiri (City of Fremont)  
Associate Transportation Engineer  
Phone: 510.494.4757  
Email: [damiri@fremont.gov](mailto:damiri@fremont.gov)



# City of Fremont | Caltrans (cont'd)

**Total Lifetime Benefits: \$8,590,230**  
**Total Project Costs: \$282,150**  
**Overall Project Benefit/Cost Ratio: 30:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 14% (302,100 hrs)



Average Reduction in Auto Signal Delay: 29%

Average Reduction in Number of Stops: 34%



Fuel Consumption Savings: 11% (745,300 gal.)



Total Emissions Reduced: 39.0 tons:  
 (ROG, NOx, PM2.5, CO)

## ADDITIONAL BENEFITS:

### Pedestrians

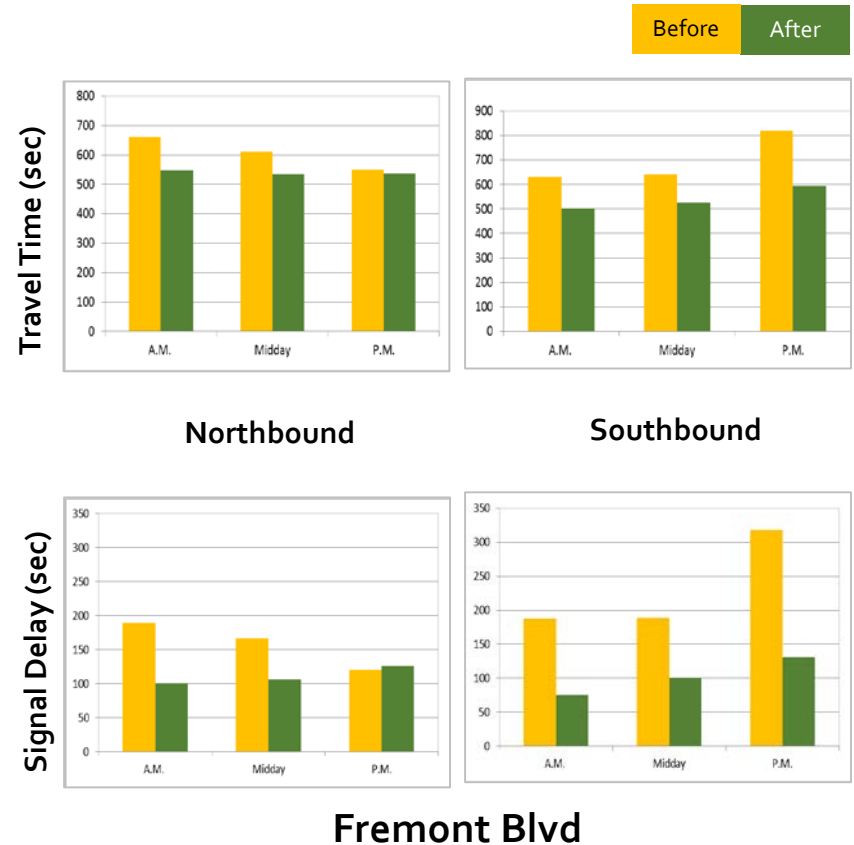
- The "Walk" timing and "Flash Don't Walk" clearance timing parameters were updated to provide adequate time for children and seniors to safely cross the study intersections.

### Bicyclists

- Per the new California MUTCD, the minimum green time was increased for the through movements at each study intersection to enhance traffic safety for bicyclists traveling along the study corridors.

### Traffic Safety

- The yellow clearance and red clearance timing parameters were updated, per the agency's recommendations, based on posted speed limits. The traffic signal coordination has minimized the potential for rear-end collisions.





## PROJECT SUMMARY:

### Corridors:

- First Street
- Livermore Avenue
- Portola Avenue
- Stanley Blvd/Railroad Ave/First St
- Vasco Road

### Number of Signals: 42

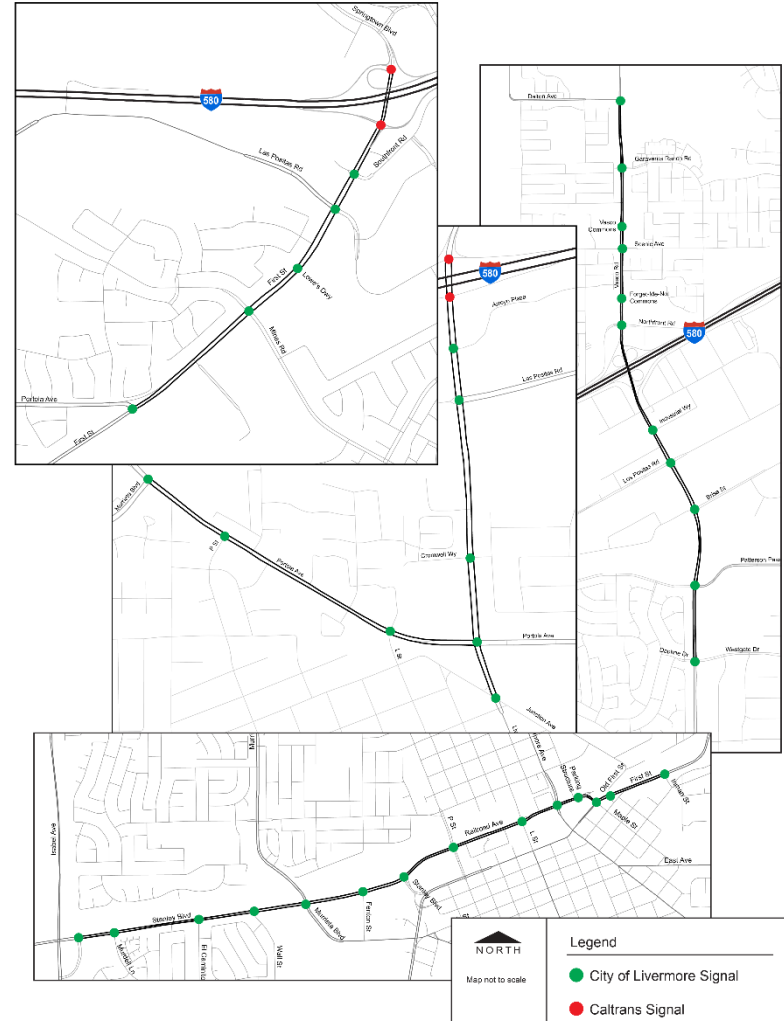
- 38 (operated and maintained by City of Livermore)
- 4 (operated and maintained by Caltrans)

### Scenarios:

- Weekday AM and PM peak periods

### Additional Services:

- Fine-tuned existing Transit Signal Priority parameters along the Stanley Blvd-Railroad Ave-First St corridor.



## AGENCY CONTACT:

Carlo Sendaydiego (City of Livermore)

City Traffic Engineer

Phone: 925.960.4517

Email: csendaydiego@cityoflivermore.net

# City of Livermore | Caltrans (cont'd)

**Total Lifetime Benefits: \$2,139,700**  
**Total Project Costs: \$121,750**  
**Overall Project Benefit/Cost Ratio: 18:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 9% (79,900 hrs)



Average Reduction in Auto Signal Delay: 28%  
 Average Reduction in Number of Stops: 15%



Fuel Consumption Savings: 7% (149,800 gal.)



Total Emissions Reduced: 7.8 tons:  
 (ROG, NOx, PM2.5, CO)

## ADDITIONAL BENEFITS:

### Pedestrians

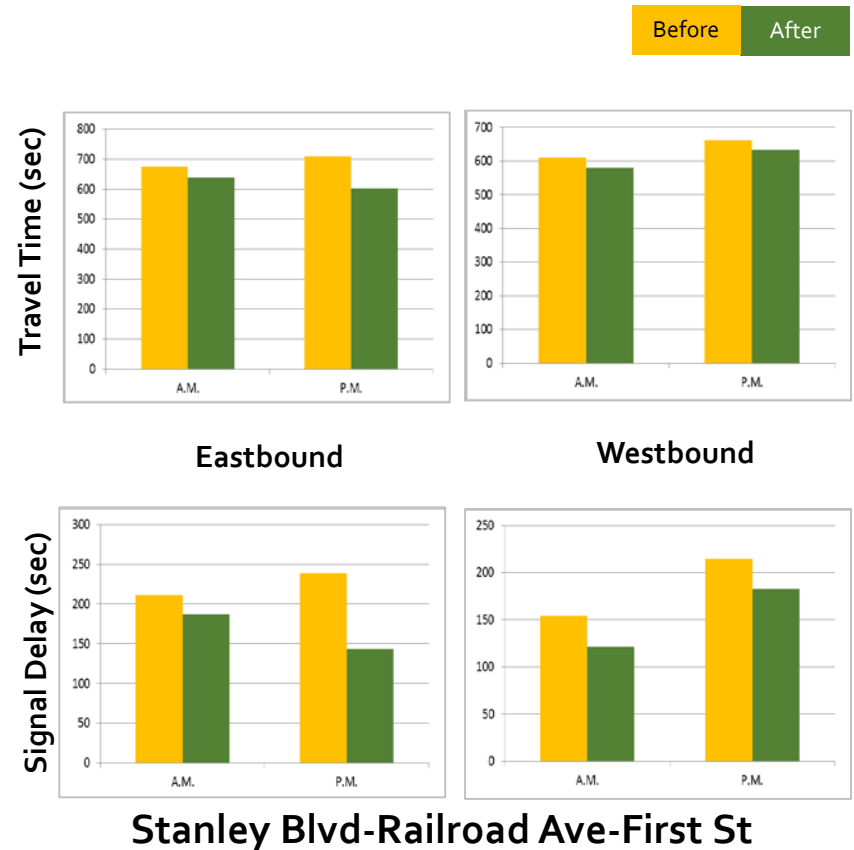
- The "Walk" timing and "Flash Don't Walk" clearance timing parameters were updated to provide adequate time for children and seniors to safely cross the study intersections.

### Bicyclists

- Per the new California MUTCD, the minimum green time was increased for the through movements at each study intersection to enhance traffic safety for bicyclists traveling along the study corridors.

### Traffic Safety

- The yellow clearance and red clearance timing parameters were updated, per the agency's recommendations, based on posted speed limits. The traffic signal coordination has minimized the potential for rear-end collisions.



## PROJECT SUMMARY:

### Corridors:

- Main Street
- Empire Avenue

### Number of Signals: 11

- 11 (operated and maintained by City of Oakley)

### Scenarios:

- Weekday AM, Midday and PM peak periods
- Weekday School PM peak period

### Number of GPS Clocks: 11

(for time-based coordination)

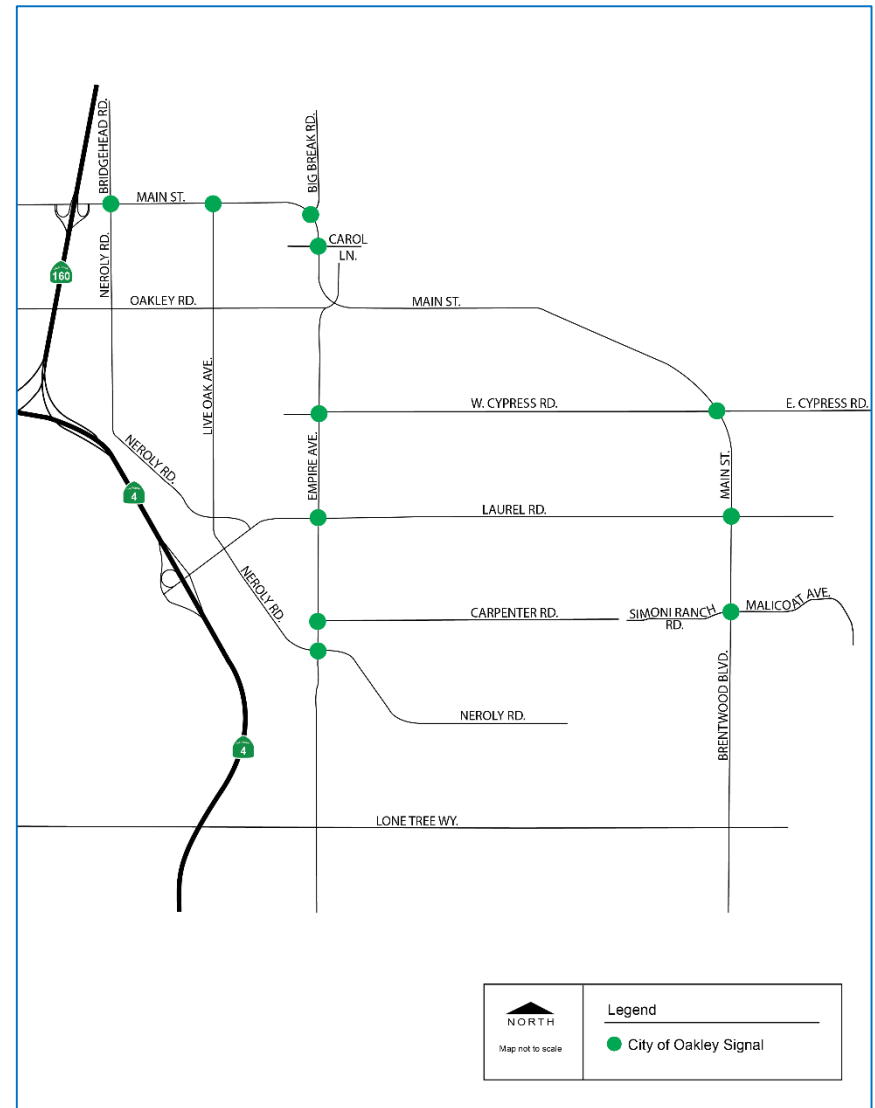
## AGENCY CONTACT:

Kevin Rohani (City of Oakley)

City Engineer

Phone: 925.625.7003

Email: rohani@ci.oakley.ca.us



# City of Oakley (cont'd)

**Total Lifetime Benefits: \$776,170**  
**Total Project Costs: \$79,480**  
**Overall Project Benefit/Cost Ratio: 10:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 8% (32,300 hrs)



Average Reduction in Auto Signal Delay: 12%  
 Average Reduction in Number of Stops: 18%



Fuel Consumption Savings: 6% (29,400 gal.)



Total Emissions Reduced: 1.6 tons:  
 (ROG, NOx, PM2.5, CO)

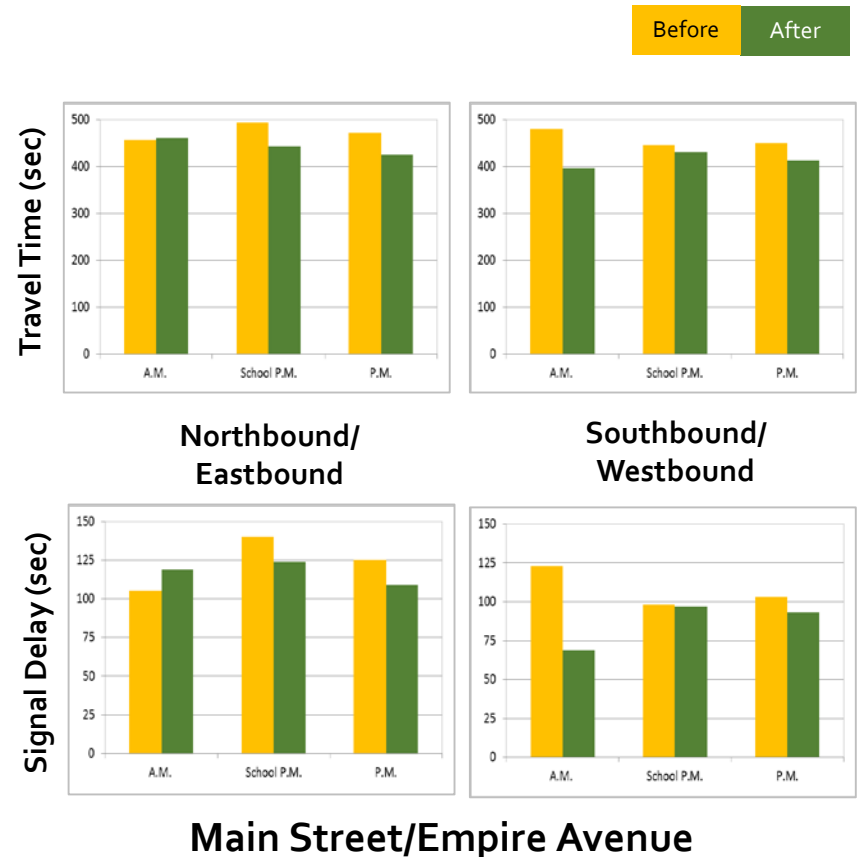
## ADDITIONAL BENEFITS:

### Pedestrians

- The "Walk" timing and "Flash Don't Walk" clearance timing parameters were also updated to provide adequate time for pedestrians to safely cross the intersections, based on the new walking speed of 3.5 feet/second, as specified in 2014 California MUTCD standards.

### Traffic Safety

- The yellow clearance timing parameters were updated based on posted speed limits along the study corridor to enhance traffic safety.





# City of Pleasanton

## PROJECT SUMMARY:

### Corridors:

- Stoneridge Drive

### Number of Signals: 47

- 47 (operated and maintained by City of Pleasanton)

### Scenarios:

- Weekday AM and PM peak periods

### Additional Services:

- Incident management flush plans along Stoneridge Drive, Hacienda Drive, Hopyard Road, Foothill Road, Owens Drive, and Santa Rita Road

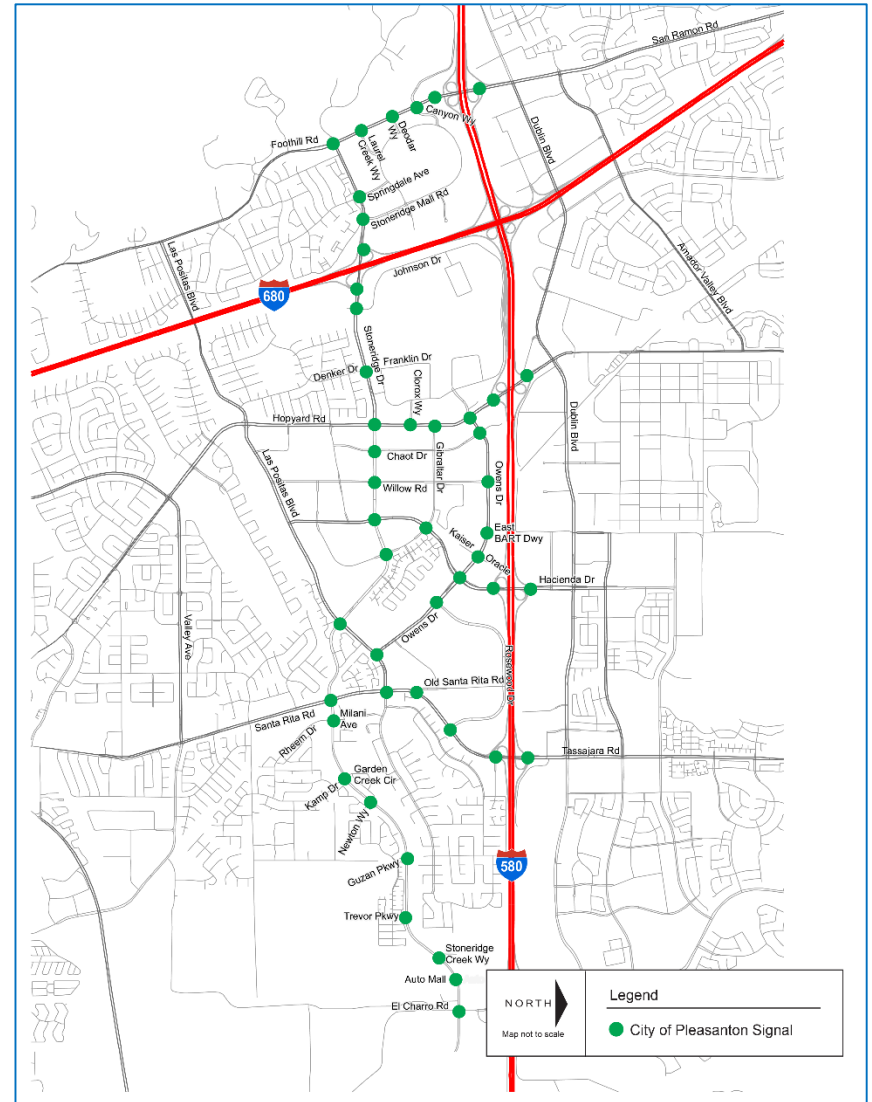
## AGENCY CONTACT:

Mike Tassano (City of Pleasanton)

City Engineer

Phone: 925.931.5670

Email: [mtassano@cityofpleasantonca.gov](mailto:mtassano@cityofpleasantonca.gov)



# City of Pleasanton (cont'd)

**Total Lifetime Benefits: \$1,705,170**  
**Total Project Costs: \$43,130**  
**Overall Project Benefit/Cost Ratio: 40:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 16% (57,700 hrs)



Average Reduction in Auto Signal Delay: 34%  
 Average Reduction in Number of Stops: 17%



Fuel Consumption Savings: 13% (165,000 gal.)



Total Emissions Reduced: 8.3 tons:  
 (ROG, NOx, PM2.5, CO)

## ADDITIONAL BENEFITS:

### Pedestrians

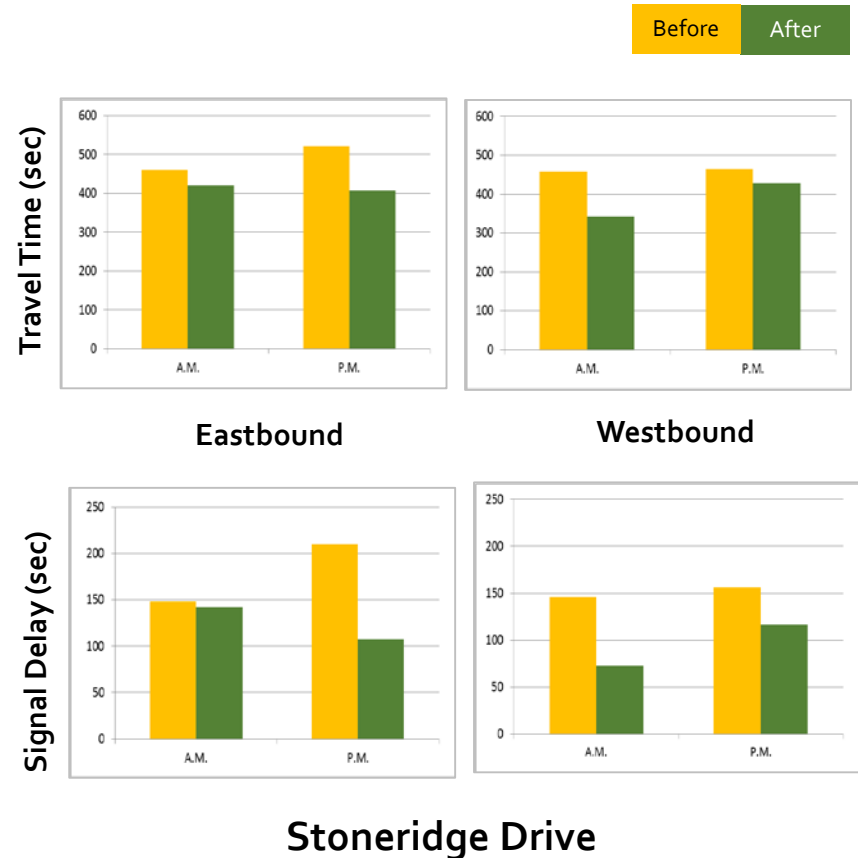
- For improved safety, the pedestrian clearance intervals were increased at 14 intersections based on current 2014 California MUTCD standards. Despite the increase in pedestrian intervals, travel time benefits were achieved along the corridors.

### Traffic Safety

- Yellow intervals were updated at five project intersections to meet the current CA MUTCD standards.

### Transit

- A number of transit routes operate along Stoneridge Drive. It is expected that the improved traffic flow and reduction in congestion along the corridor will result in a reduction of transit travel times along this corridor.



# City of San Jose

## PROJECT SUMMARY:

### Corridors:

- The Alameda
- Bascom Avenue
- San Carlos Street
- Hillsdale Avenue
- Meridian Avenue
- Tasman Drive
- N. First Street

### Number of Signals: 48

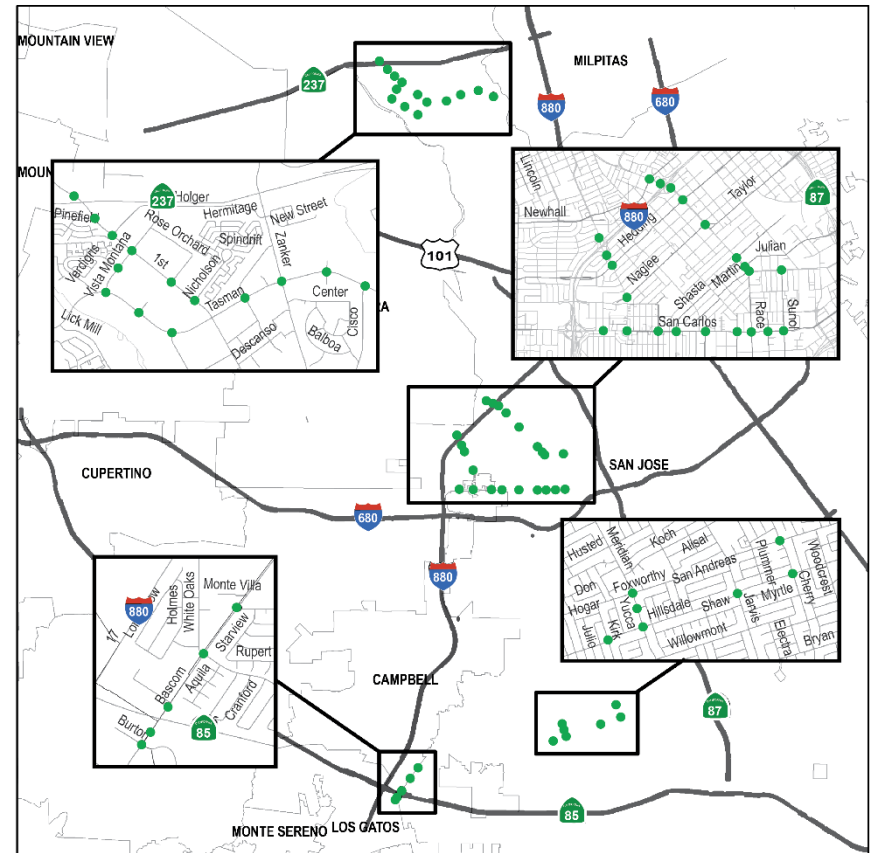
- 48 (operated and maintained by City of San Jose)

### Scenarios:

- Weekday AM, Midday, and PM peak periods
- Weekend AM, Midday, and PM peak periods

### Additional Services:

- Fine-tuned existing Transit Signal Priority parameters along the San Carlos Street corridor.



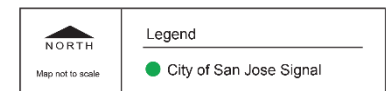
## AGENCY CONTACT:

Scott Ogilvie (City of San Jose)

City Engineer

Phone: 408.975.3731

Email: [scott.ogilvie@sanjoseca.gov](mailto:scott.ogilvie@sanjoseca.gov)



# City of San Jose (cont'd)

**Total Lifetime Benefits: \$10,606,960**  
**Total Project Costs: \$230,750**  
**Overall Project Benefit/Cost Ratio: 46:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 20% (367,000 hrs)



Average Reduction in Auto Signal Delay: 56%  
 Average Reduction in Number of Stops: 47%



Fuel Consumption Savings: 16% (963,000 gal.)



Total Emissions Reduced: 49.2 tons:  
 (ROG, NOx, PM2.5, CO)

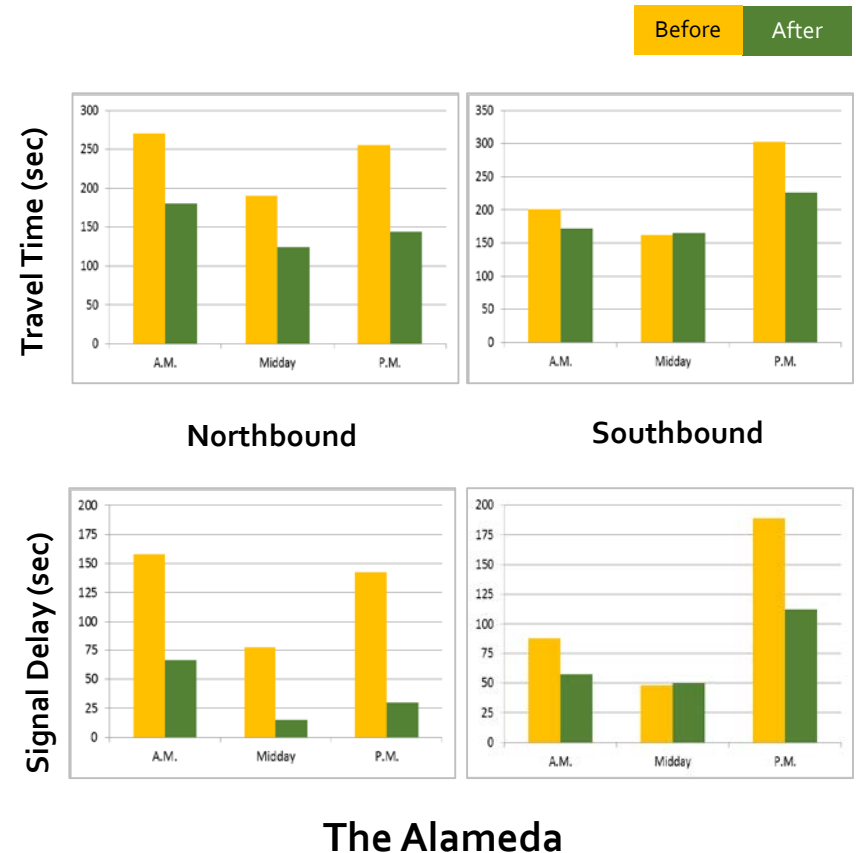
## ADDITIONAL BENEFITS:

### Pedestrians

- The pedestrian timings were reviewed based on the 2014 California MUTCD to enhance safety. The WALK and flashing DON'T WALK clearance intervals were increased at six intersections, ensuring adequate time for pedestrians to cross. In particular, the WALK time was increased at two intersections to provide adequate time for children to safely cross the study intersections that were within close proximity of schools.

### Transit

- Transit Signal Priority timing parameters were updated at nine intersections along the San Carlos Street corridor to maximize the potential for buses to arrive at a signal on green and thus minimize transit travel time and delay.







# City of San Mateo | Caltrans (cont'd)

**Total Lifetime Benefits: \$16,033,100**  
**Total Project Costs: \$101,500**  
**Overall Project Benefit/Cost Ratio: 158:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 29% (535,900 hrs)



Average Reduction in Auto Signal Delay: 47%

Average Reduction in Number of Stops: 23%



Fuel Consumption Savings: 25% (1,593,600 gal.)



Total Emissions Reduced: 79.3 tons:  
 (ROG, NOx, PM2.5, CO)

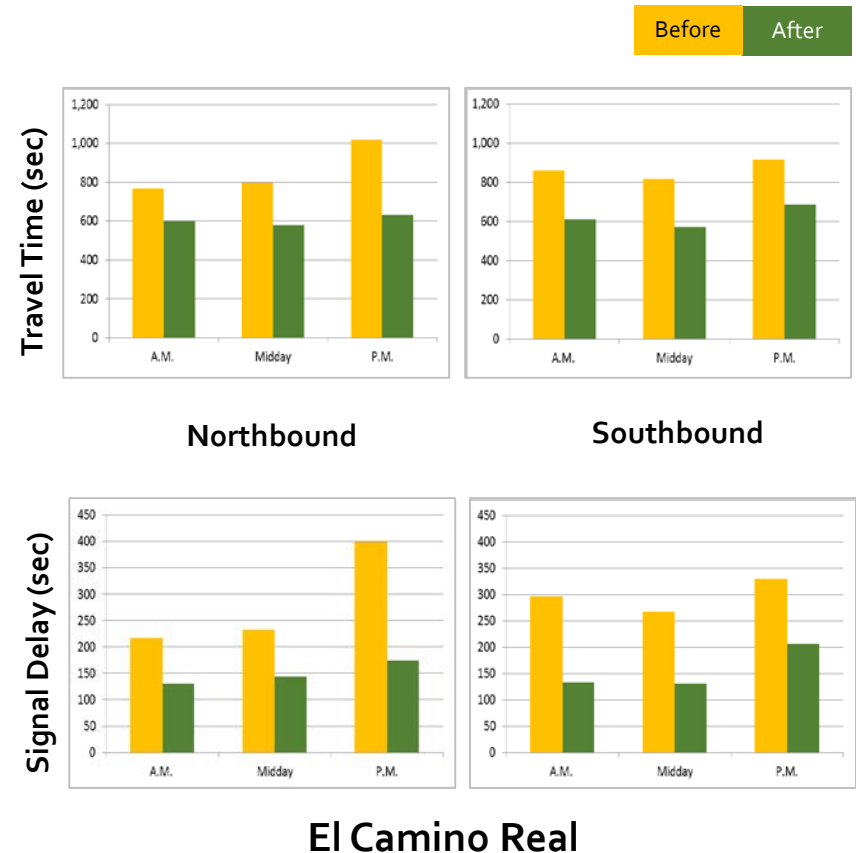
## ADDITIONAL BENEFITS:

### Pedestrians

- The "Walk" timing and "Flash Don't Walk" clearance timing parameters were updated to provide adequate time for pedestrians to safely cross the intersections, based on the new walking speed of 3.5 feet/second, as specified in 2014 California MUTCD standards.

### Traffic Safety

- To enhance traffic safety, the yellow clearance timing parameters were updated based on posted speed limits along the study corridor.





# City of Santa Clara | Caltrans



## PROJECT SUMMARY:

### Corridors:

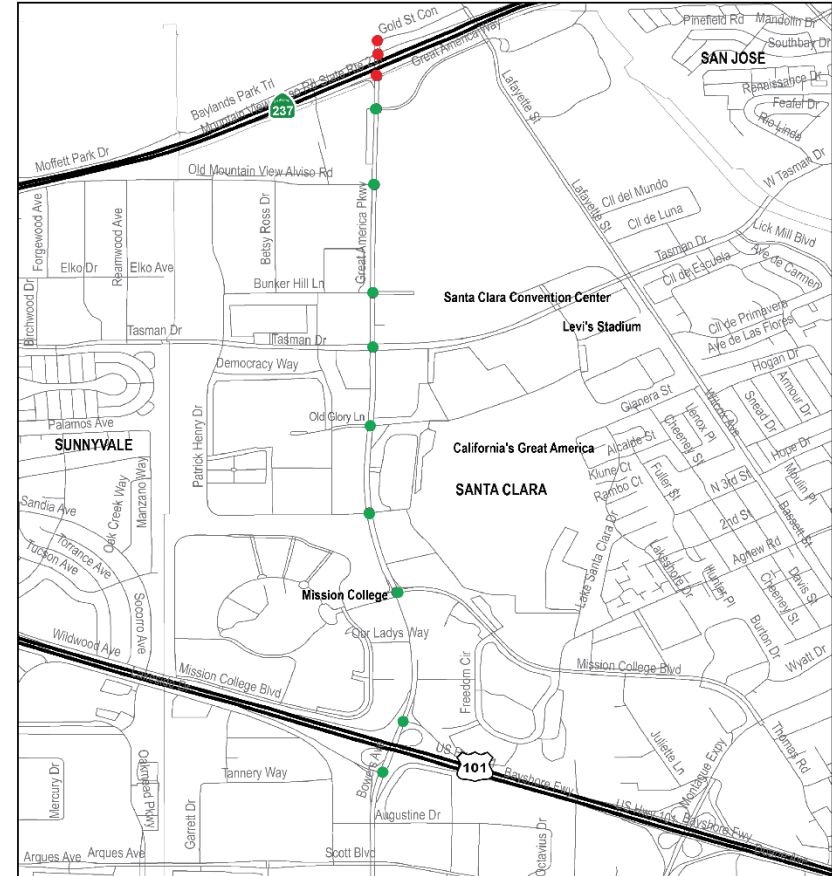
- Great America Parkway

### Number of Signals: 12

- 9 (operated and maintained by the City of Santa Clara)
- 3 (operated and maintained by Caltrans)

### Scenarios:

- Weekday AM, Midday, and PM peak periods
- Weekend AM, Midday, and PM peak periods



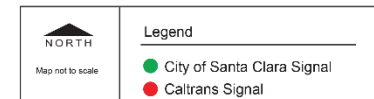
## AGENCY CONTACT:

Dennis Ng (City of Santa Clara)

Traffic Engineer

Phone: 408.615.3021

Email: [dng@santaclaraca.gov](mailto:dng@santaclaraca.gov)



# City of Santa Clara | Caltrans (cont'd)

**Total Lifetime Benefits: \$2,970,110**  
**Total Project Costs: \$79,500**  
**Overall Project Benefit/Cost Ratio: 37:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 14% (92,900 hrs)



Average Reduction in Auto Signal Delay: 56%  
 Average Reduction in Number of Stops: 47%



Fuel Consumption Savings: 14% (344,900 gal.)



Total Emissions Reduced: 17.2 tons:  
 (ROG, NOx, PM2.5, CO)

## ADDITIONAL BENEFITS:

### Bicyclists

- The minimum green times were updated for bicyclists for the through movements at each study intersection along the project corridor. Changes to minimum green intervals were made at seven intersections to provide more time for bicyclists to traverse each intersection.

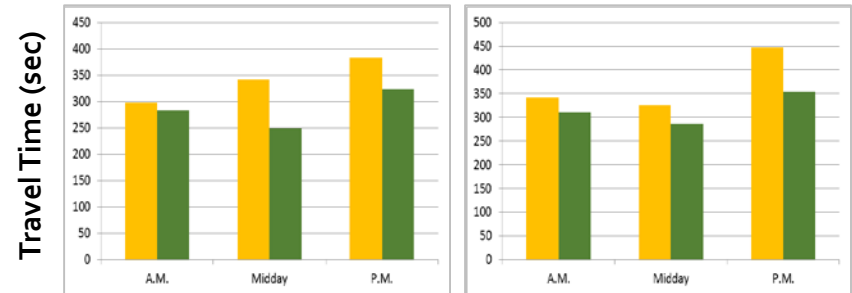
### Pedestrians

- The pedestrian timings were reviewed based on the 2014 California MUTCD to enhance pedestrian safety. The WALK and flashing DON'T WALK clearance intervals were increased at seven project intersections, ensuring adequate time for pedestrians to cross..

### Traffic Safety

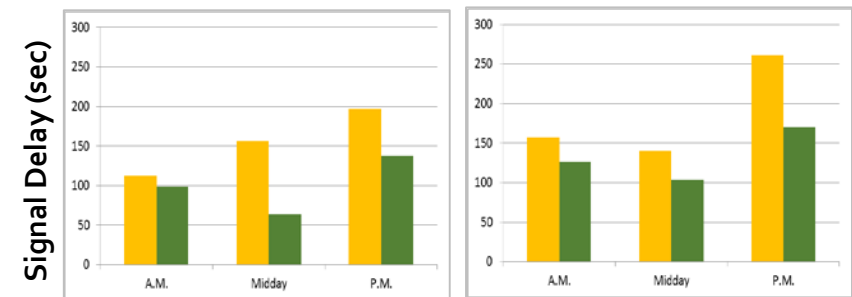
- To enhance traffic safety, the yellow clearance and all-red timing parameters were evaluated based on the latest 2014 California MUTCD standards using 85<sup>th</sup> Percentile vehicular speed. Yellow clearance times were increased at nine project intersections, ensuring adequate clearance times for vehicle travel.

Before After



Northbound

Southbound



Great America Parkway

## PROJECT SUMMARY:

### Corridors:

- Farmers Lane
- Fulton Road
- Dutton Avenue

### Number of Signals: 15

- 9 (operated and maintained by the City of Santa Rosa)
- 6 (operated and maintained by Caltrans)

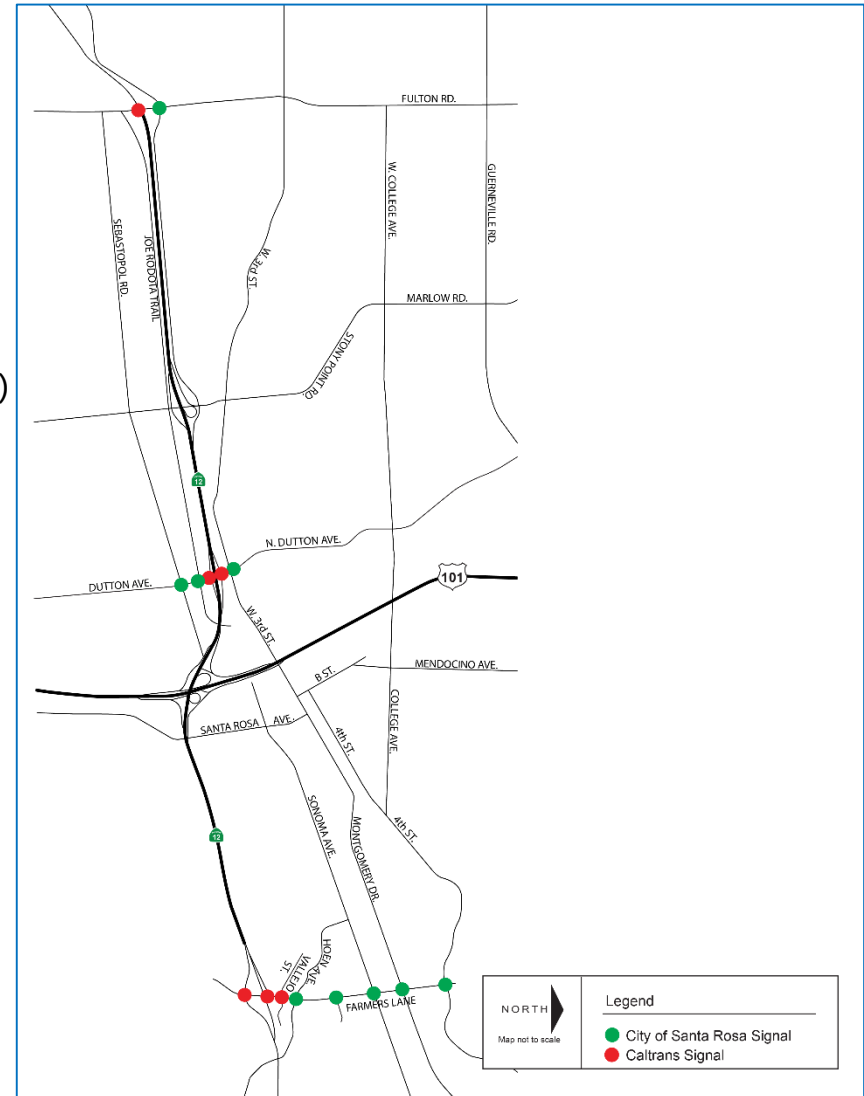
### Scenarios:

- Weekday AM, Midday, and PM peak periods
- Weekday School PM peak period

**Number of GPS Clocks: 9**  
(for time-based coordination)

## AGENCY CONTACT:

Robert Sprinkle (City of Santa Rosa)  
Deputy Director Public Works - Traffic  
Phone: 707.543.3817  
Email: rsprinkle@srcity.org



# City of Santa Rosa | Caltrans (cont'd)

**Total Lifetime Benefits: \$5,821,290**  
**Total Project Costs: \$73,850**  
**Overall Project Benefit/Cost Ratio: 79:1**

## LIFETIME (5 YRS) PROJECT BENEFITS:



Auto Travel Time Savings: 30% (219,900 hrs)



Average Reduction in Auto Signal Delay: 68%

Average Reduction in Number of Stops: 50%



Fuel Consumption Savings: 25% (387,500 gal.)



Total Emissions Reduced: 18.6 tons:  
 (ROG, NOx, PM2.5, CO)

## ADDITIONAL BENEFITS:

### Pedestrians

- The "Walk" timing and "Flash Don't Walk" clearance timing parameters were updated to provide adequate time for pedestrians to safely cross the intersections, based on the new walking speed of 3.5 feet/second, as specified in 2014 California MUTCD standards.

### Traffic Safety

- To enhance traffic safety, the yellow clearance timing parameters were updated based on posted speed limits and speed surveys wherever applicable along the study corridor.

