

Wolfe Road Corridor Traffic Improvement Study

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Community Meeting
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Kimley»Horn



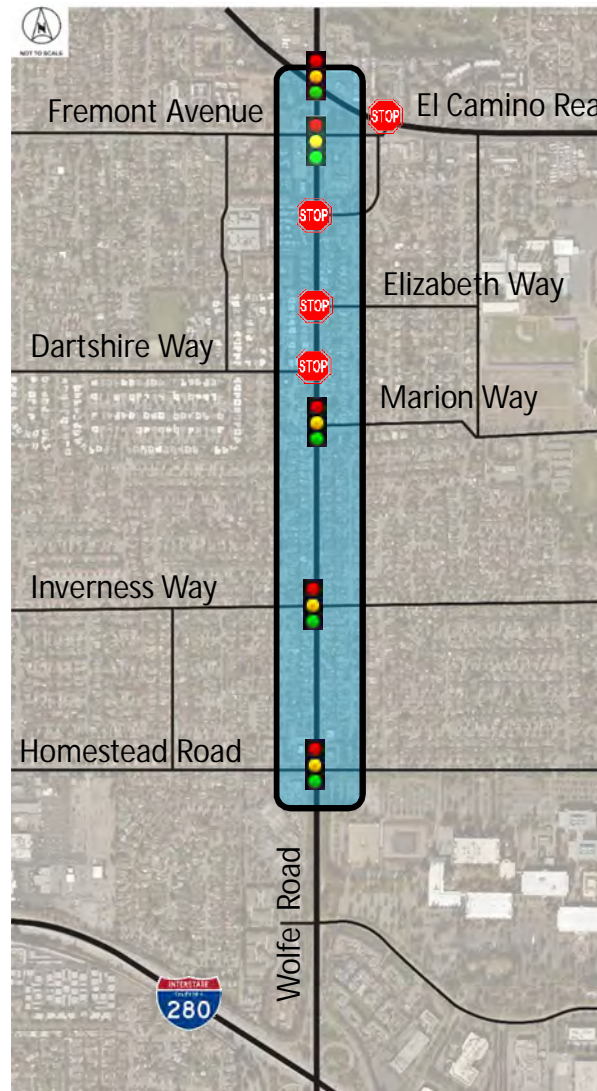
Agenda

- Presentation
 - Project Overview
 - Feedback Received from Meeting #1
 - Improvement Alternatives
 - Triangle
 - Corridor
 - Comparison of Alternatives
- Open House
- Review of Input

Wolfe Road Corridor Traffic Improvement Study



Project Corridor



- Study Area
- Study Intersection (Signalized)
- Study Intersection (Unsignalized)





Project Objectives

- Reduce congestion and improve traffic operations and safety
- Support safe and efficient bicycle, pedestrian, and transit facilities
- Evaluation of on-street parking
- Identify cost-effective solutions





Current Challenges

- Congestion at El Camino Real/Fremont/Wolfe “Triangle”
- Difficult at times to turn onto Wolfe Road at unsignalized intersections
- Gaps in bike lanes at either end of corridor
- Many shifts in travel lanes and bike lanes





Collision History (2010 to 2015)

- 93 total incidents along Wolfe Road between ECR and Homestead (exclusive)
 - 79% of total incidents occurred at intersections
 - 0 fatal crashes
 - Rear-end was most common type of collision
 - 5 involving bikes or pedestrians
- 77 total incidents at ECR intersection
 - 5 involving bikes or pedestrians
- 56% of accidents occur in peak periods



Community Meeting #1 Summary

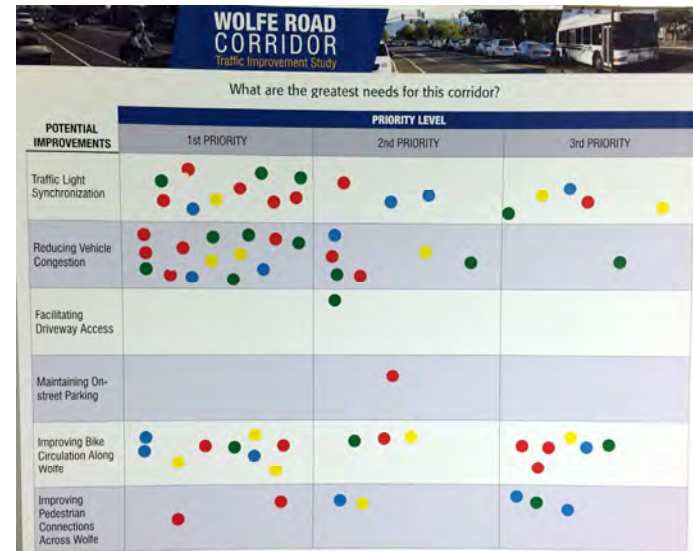
- Desire to reduce cut-through traffic
- Concerns about anticipated traffic growth
- Anticipate increase in pedestrian activity
- The Triangle has greatest need for improvement





Community Priorities

1. Reduce vehicle congestion
2. Improving traffic light synchronization
3. Improving bicycle circulation



Maintenance of on-street parking has not been mentioned thus far as a community priority

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Traffic Improvement Study



The Triangle



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Existing Triangle





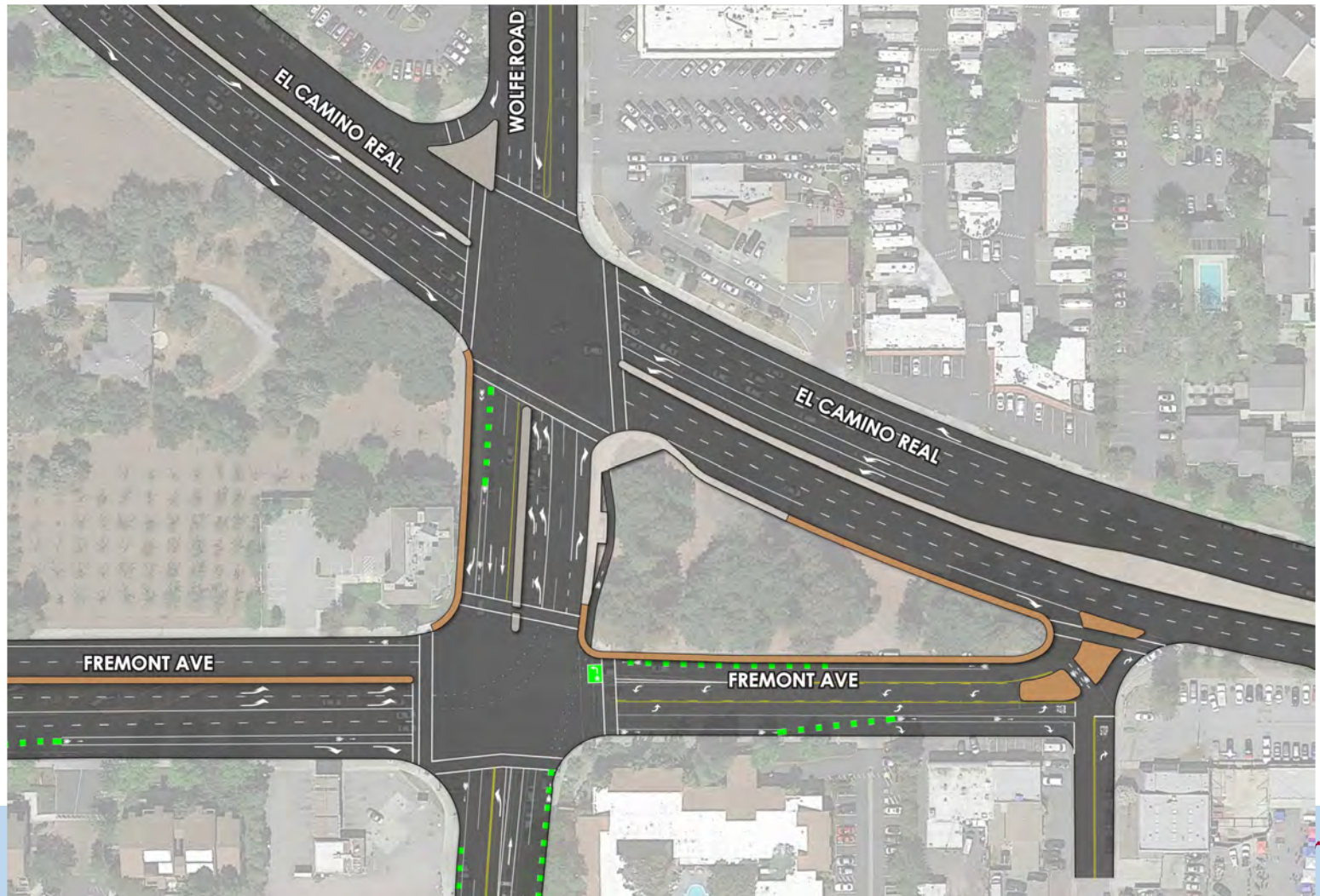
Triangle Improvements in All Concepts

- Signal synchronization
- Update traffic signal timing to enhance pedestrian, bicycle, and vehicular safety
- Eliminate southbound lane merge south of Fremont Ave (3 lanes to 2 lanes)

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Triangle Alternative 1





Extend Wolfe Rd Bike Connection to El Camino Real

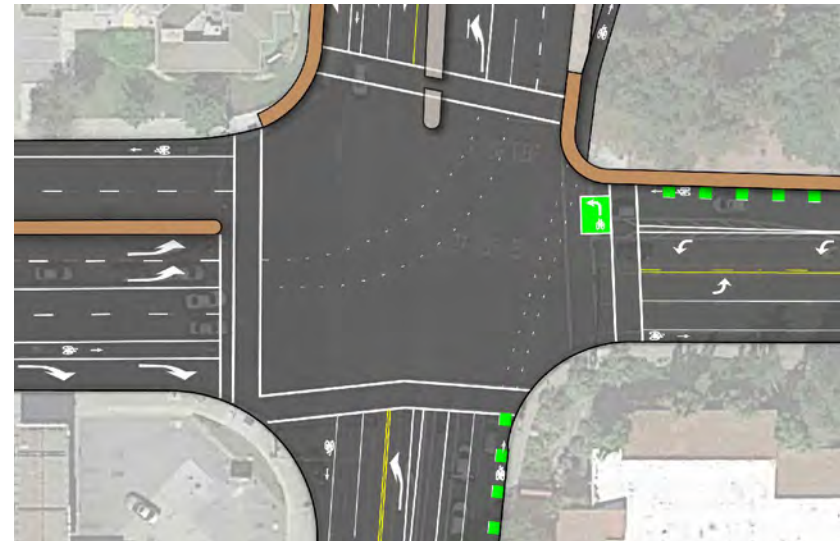
- Between El Camino Real and Fremont Ave
 - Bike path in northbound direction
 - Bike slot in southbound direction
- Extend bike lanes on Wolfe Road to Fremont Ave





Two-Stage Left-Turn Box

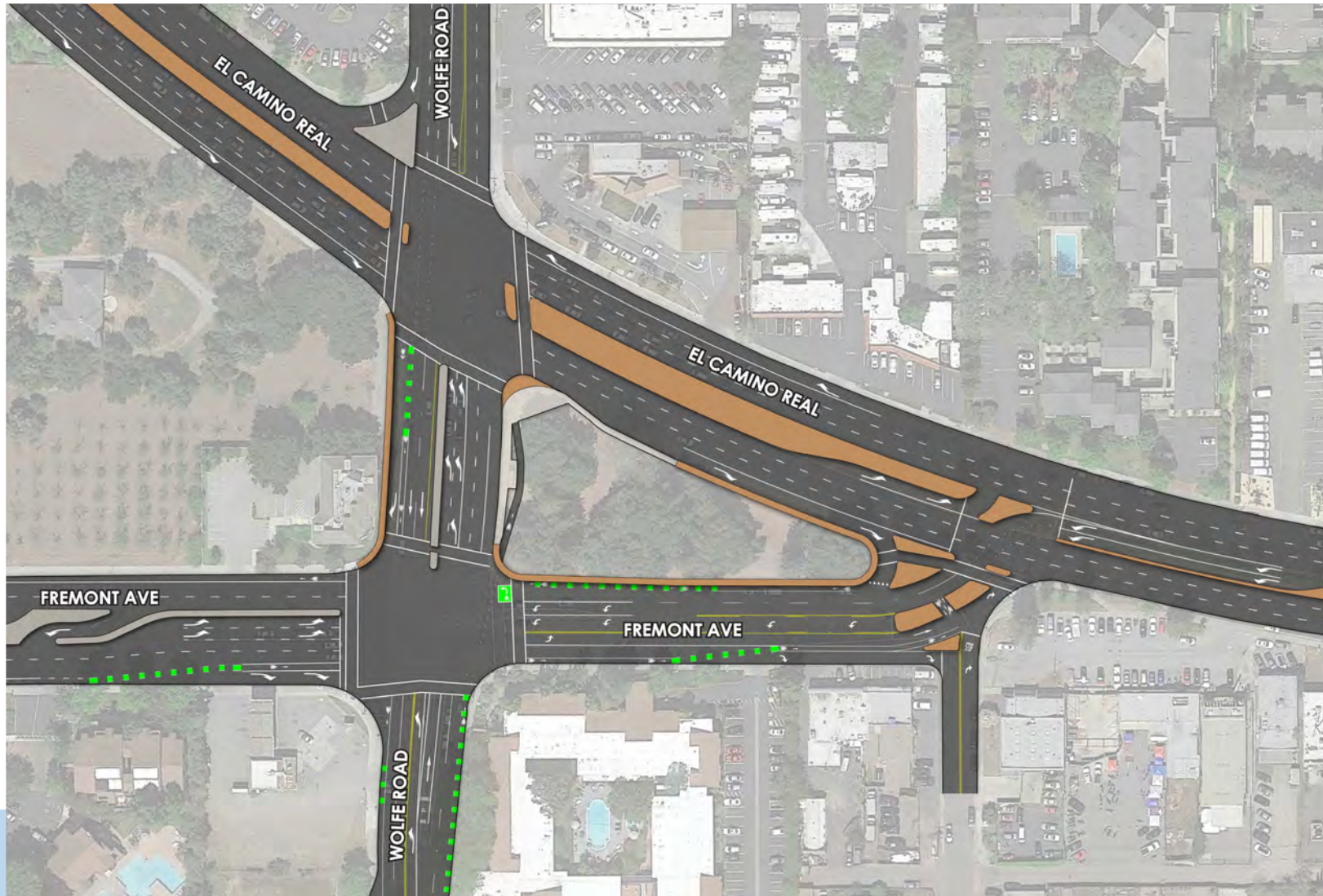
- Facilitate northbound left-turn movement from Wolfe Rd to westbound Fremont Ave
- Requires prohibition of right-turn on red



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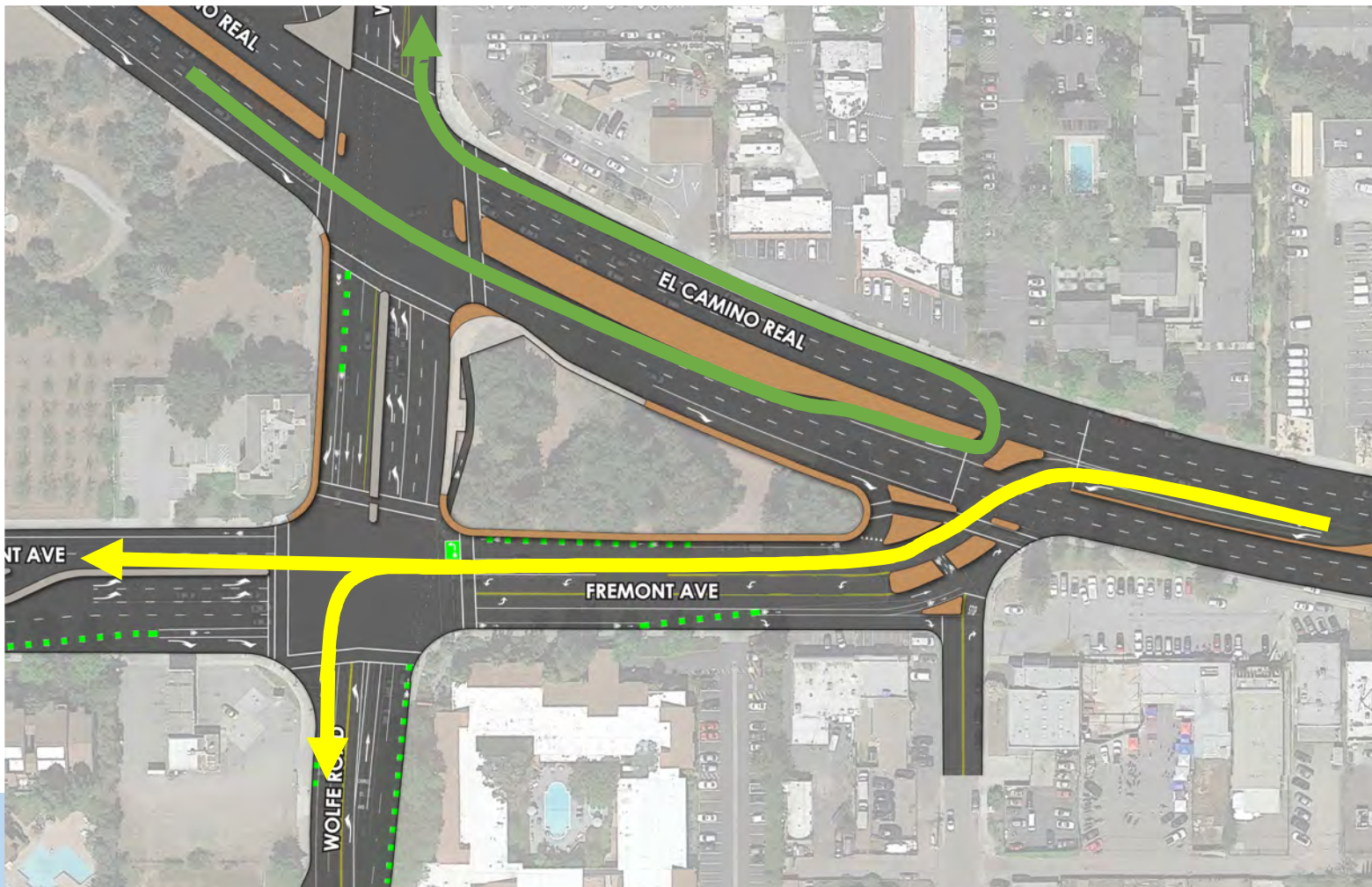
Triangle Alternative 2



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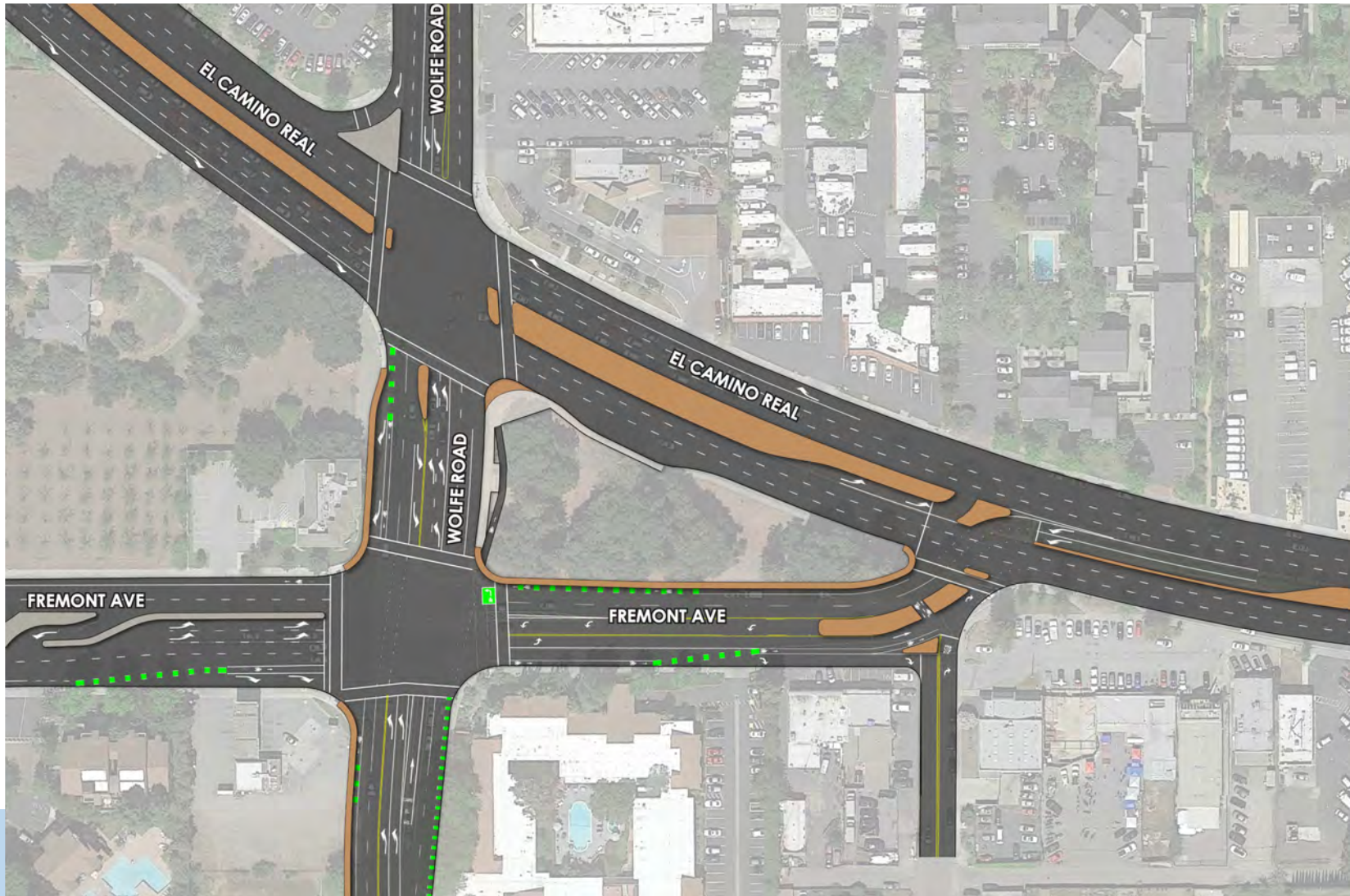
Triangle Alternative 2 Modified Routing



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Triangle Alternative 3





Comparison of Triangle Alternatives

Traffic Circulation

- Triangle Alternative 1 achieves moderate reduction in congestion although it does improve safety
- Triangle Alternatives 2 and 3 (elimination of eastbound/westbound left-turns at El Camino Real/Wolfe Rd) provide best operations for the triangle. Near-term delay is reduced by over 30% in AM peak period in Alternative 3

Alternative 1	Alternative 2	Alternative 3	Legend	
—	✓	✓	High Rating	✓
			Medium Rating	—
			Low Rating	✗



Comparison of Triangle Alternatives

Bicycle Circulation

- All alternatives include a number of features to improve bicycle circulation
 - Delineated bike lanes/path between El Camino Real and rest of Wolfe Rd
 - Green paint to better delineate conflict zones
 - Two-stage left-turn box for cyclists turning from northbound Wolfe Rd to westbound Fremont Ave
 - Extension of bike lanes on Fremont Ave to El Camino Real
 - Increase yellow times to meet MUTCD standards

Alternative 1	Alternative 2	Alternative 3
✓	✓	✓

Wolfe Road Corridor

Traffic Improvement Study



The Corridor



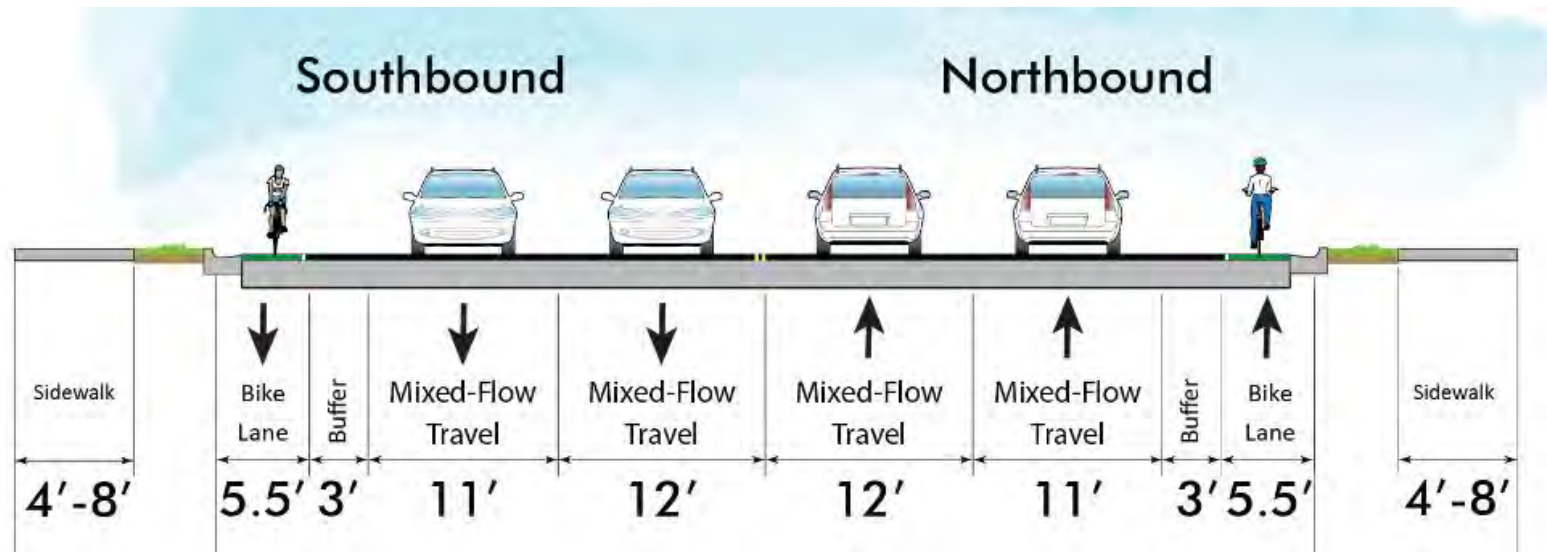


Corridor Improvements in All Concepts

- Signal synchronization
- Update traffic signal timing to enhance pedestrian, bicycle, and vehicular safety
- Signalize Dartshire Way to provide another controlled pedestrian crossing point and improve access/egress
- Eliminate lane shift along Wolfe Road



Corridor Alternative 1

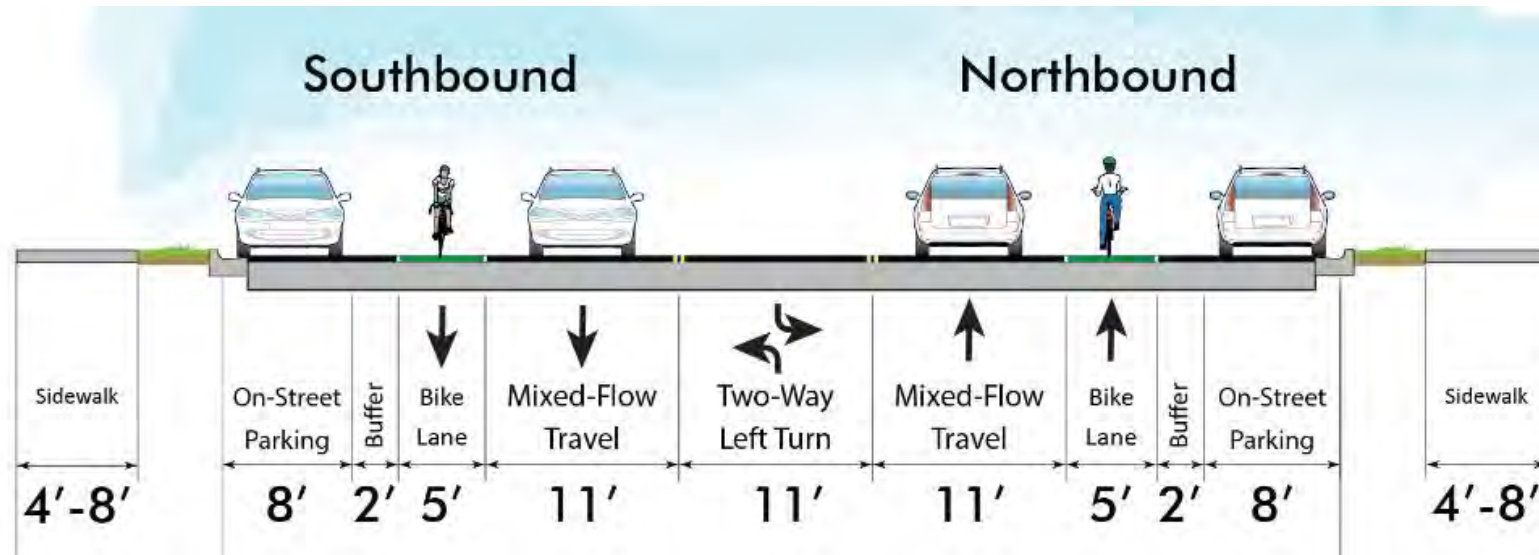


- Remove parking on both sides of Wolfe for full length of corridor
- Provide buffered bike lanes





Corridor Alternative 2



- Reduce roadway to two lanes with a center turn lane
- Provide buffered bike lanes
- Provide parking on both sides of Wolfe





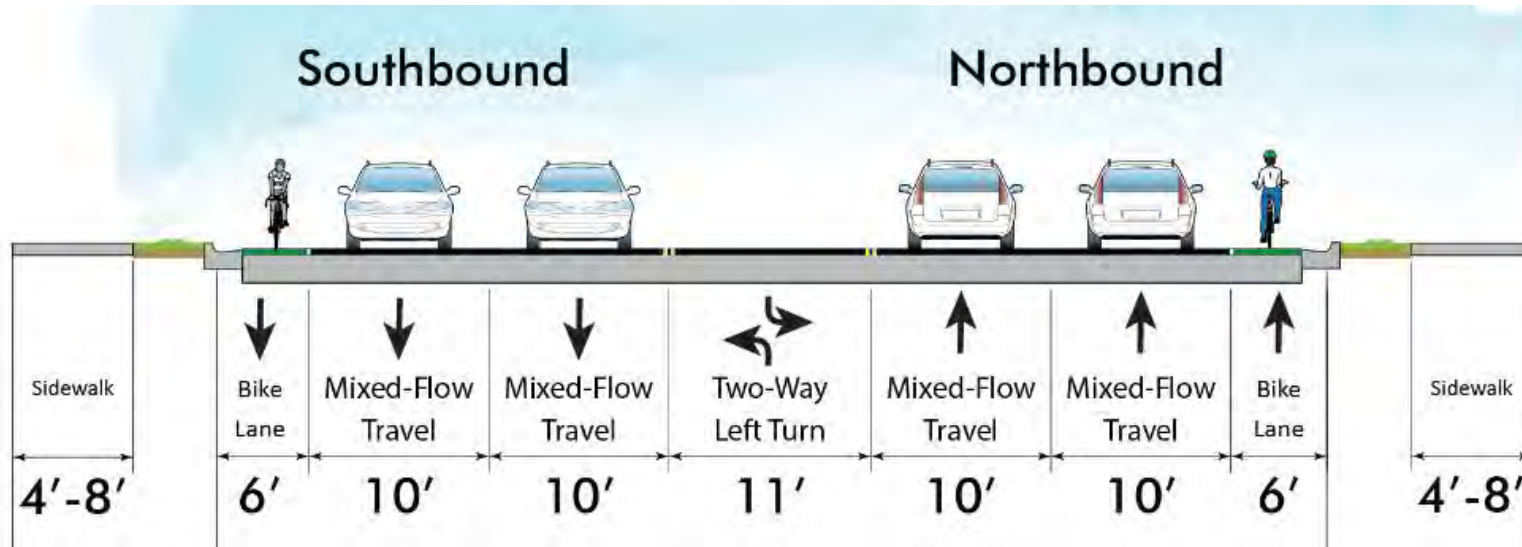
Benefits of a Two-Way Center Turn Lane

- Provides a space for vehicles to wait for a gap to turn into driveways
- Improves flow and capacity of roadway
- Improves safety of roadway by separating opposing directions of travel
- Research shows that they can reduce crash frequency by 50%
- Facilitates operation of emergency vehicles





Corridor Alternative 3



- Provide center turn lane
- Widen bike lanes
- Narrower travel lanes
- Remove parking on both sides of Wolfe





Comparison of Corridor Alternatives

Traffic Circulation

- One lane in each direction cannot handle near-term or long-term traffic
 - Would result in significant congestion and cut-through traffic
 - Would make it much more difficult to access corridor from side-streets and driveways
- Two-way left-turn lanes provide significant safety benefit and moderate capacity improvement
- Dartshire Way signalization improves access at that location

Alternative 1	Alternative 2	Alternative 3
—	X	✓



Comparison of Corridor Alternatives

Bicycle Circulation

- Buffered bike lanes, colored paint in conflict areas, and wider bike lanes all improve bicycle comfort
- Eliminating adjacent parking lane improves bicycle safety
- All alternatives eliminate wiggle and encroachment of parking into bike lane

Alternative 1	Alternative 2	Alternative 3
✓	✓	✓



Comparison of Corridor Alternatives

Pedestrian Circulation

- All alternatives provide new signalized corridor crossing at Dartshire Way
- May be opportunity for new crossing at Elizabeth Way
- Elimination of travel lanes reduces crossing length

Alternative 1	Alternative 2	Alternative 3
✓	✓	✓



Analysis Methodology

- Micro-simulation of each alternative
- Includes modeling of vehicles, trucks, buses, bicycles, and pedestrians
- Includes traffic signal parameters
- Examine delay, travel times, queuing



Analysis Volumes

- Existing volumes initially collected in May and adjusted based on September counts
- Near-Term includes approved projects (14% growth)
 - New office on Santa Ana Ct, residential on Helen Ave, Homestead Rd, Maude Ave, Main Street Project (Cupertino), Cupertino Village (Cupertino), Apple Campus 2 (Cupertino)
- Long-Term (Year 2035) includes pending and approved projects (60% growth)
 - School at Raynor Park, hotel on S. Fair Oaks, hotel on El Camino Real, Butcher's Corner, Vallco Mall (Cupertino), The Hamptons (Cupertino)



Future No Improvements Results

- 4 minute increase in travel time in peak direction in near-term
- 11 minute increase in travel time in peak direction in long-term
- 14% traffic growth causes 41% growth in delay at Triangle in near-term
- 60% traffic growth causes 94% growth in delay at Triangle in long-term



Improvement MOEs

Future with Approved and Pending Projects
Combined AM & PM Peak Periods

Metric	Future No Improvements	Change with Alternative 1	Change with Alternative 2	Change with Alternative 3
Total Delay (hr)	7,800	- 1%	+ 46%	- 17%
Fuel Consumption (gal)	3,132	0%	+ 3%	- 3%
CO Emissions (kg)	220	0%	+ 3%	- 3%

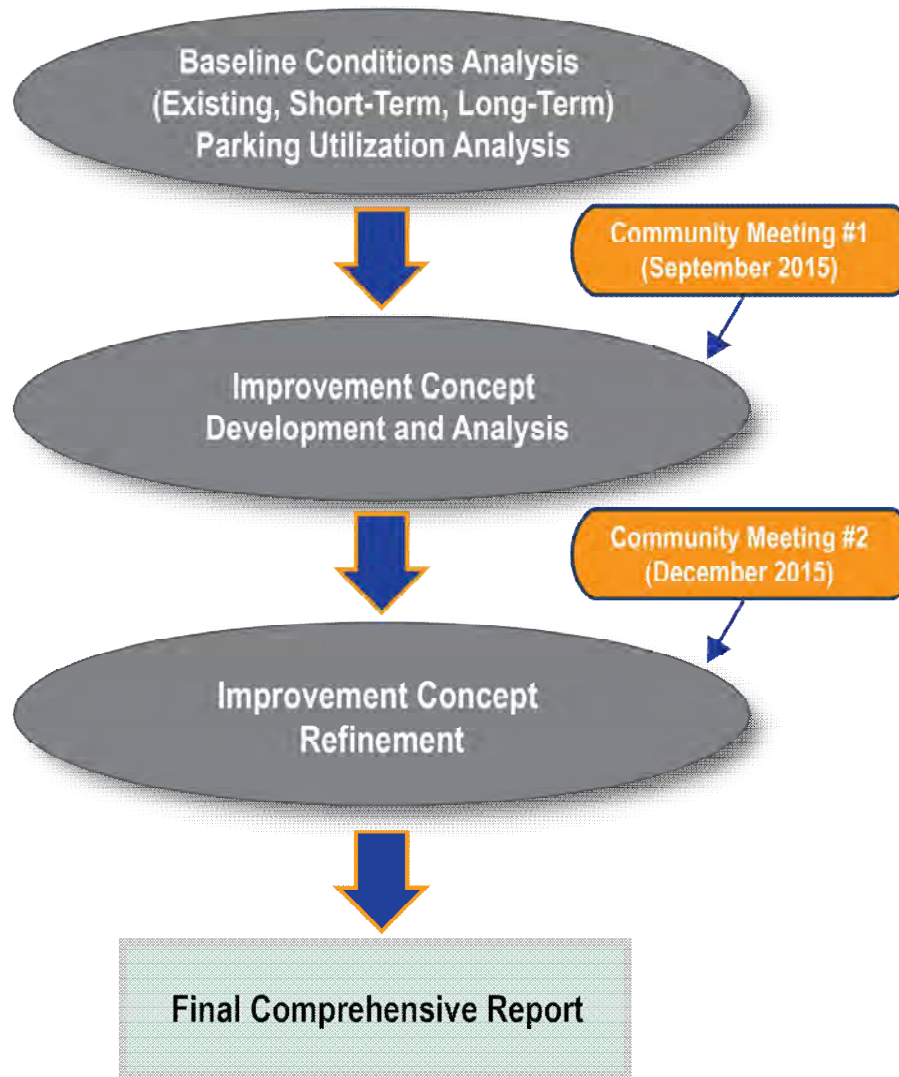


Summary of Analysis

- Signal synchronization provides significant travel time benefits
- Indirect left-turns on El Camino Real (Alts 2 & 3) provide significant reduction in delay
- Replacement of on-street parking (75 spaces) with improved bike lanes and/or center turn lane provides significant operational and safety benefits
- Reduction in travel lanes would cause significant additional congestion



Project Process





Open House

- Station 1: Triangle Improvements
- Station 2: Corridor Improvements
- Station 3: Simulation Videos
- Station 4: Other Input

We will reconvene and summarize comments received at the end