



Local Roadway Safety Plan #2

Town Council Meeting

June 8, 2022



Council Feedback

- How did we get here?
 - *Collision Analysis*
 - *Community Input*
 - *Identify High-Injury Intersections and Roadway Segments*
- What is being recommended?
 - *Priority Emphasis Areas*
 - Do these emphasis areas align with Council expectations, or are there any other emphasis areas we need to consider?
 - *Countermeasure Toolbox*
 - Do these solutions align with Council expectations, or are there any other solutions that we need to consider?
 - *Safety Projects*
 - Do you have feedback for the project team on the proposed projects?

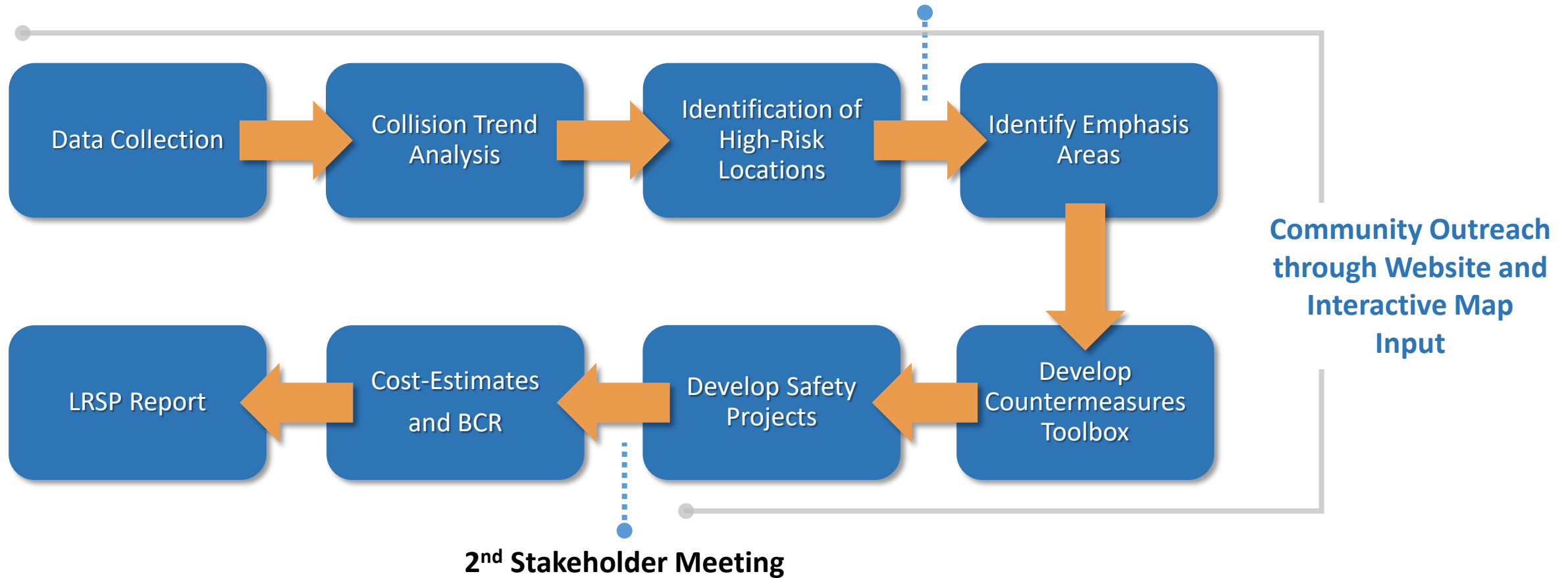
Agenda

- Project Status and Milestones
- Community Input
- Collision Analysis Findings
- Priority Emphasis Areas
- Draft Engineering and Non-Engineering Countermeasures
- Draft Safety Projects
- Implementation
- Questions to Council
- Open Discussion/Comments

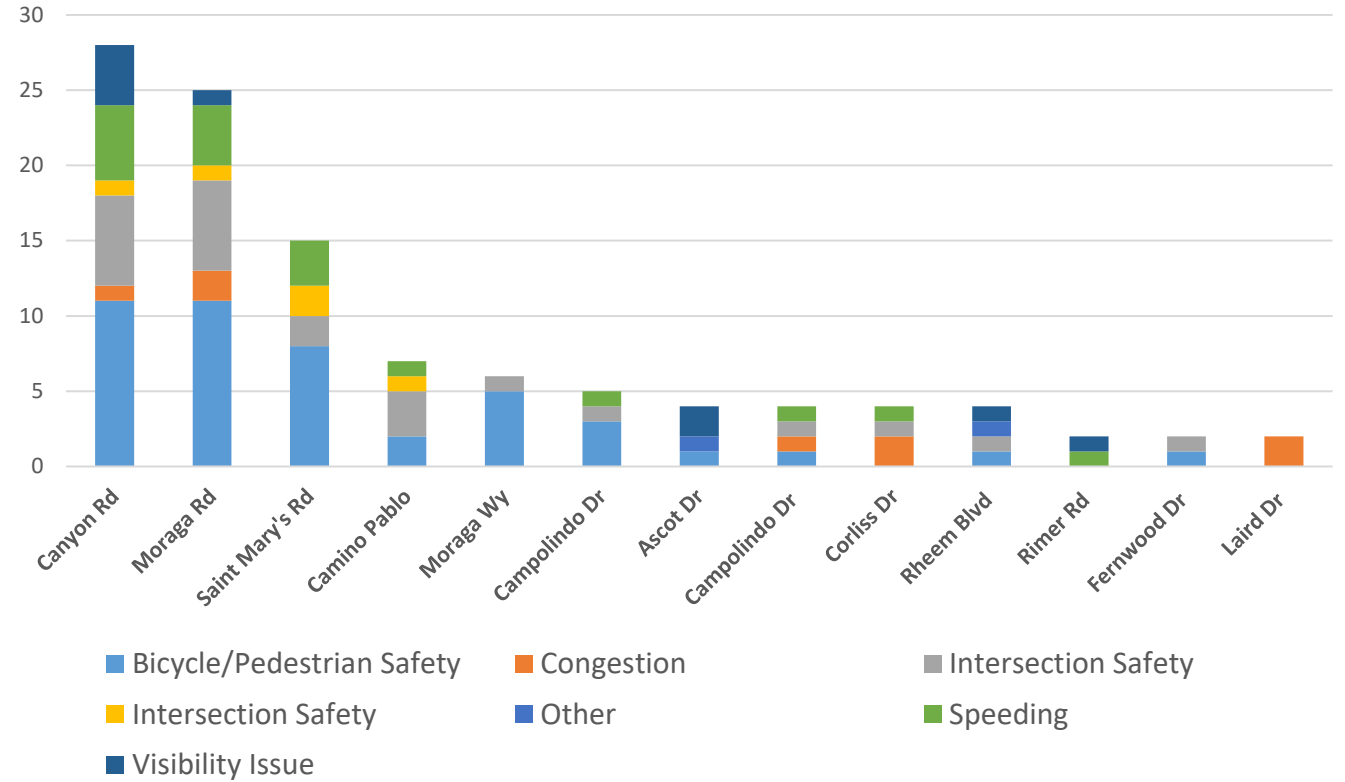
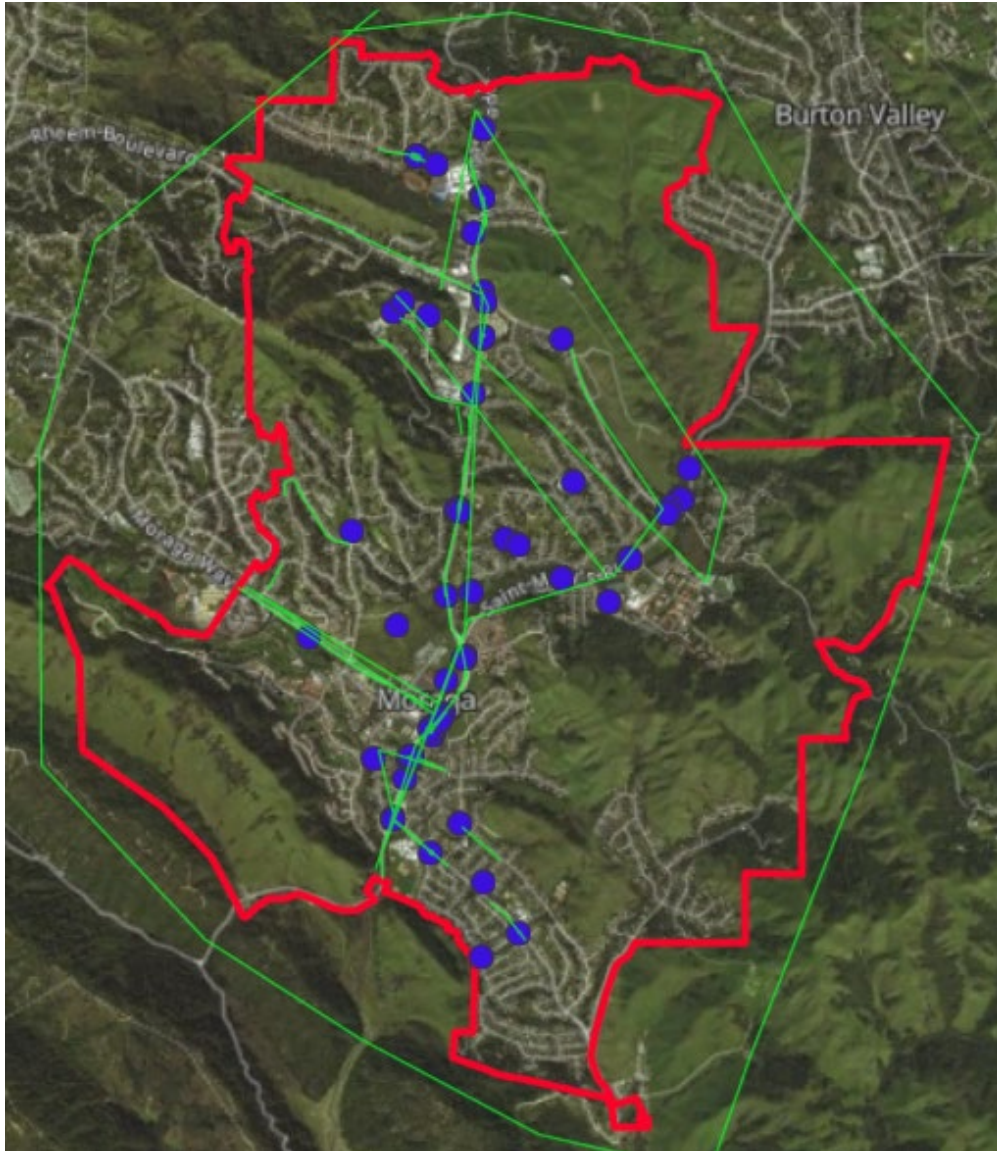


Project Status and Milestones

1st Stakeholder Meeting

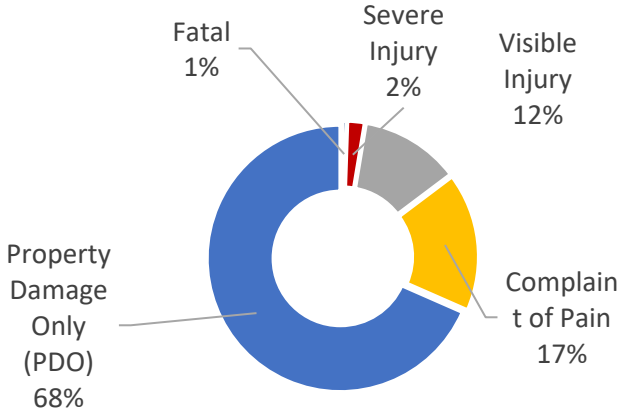
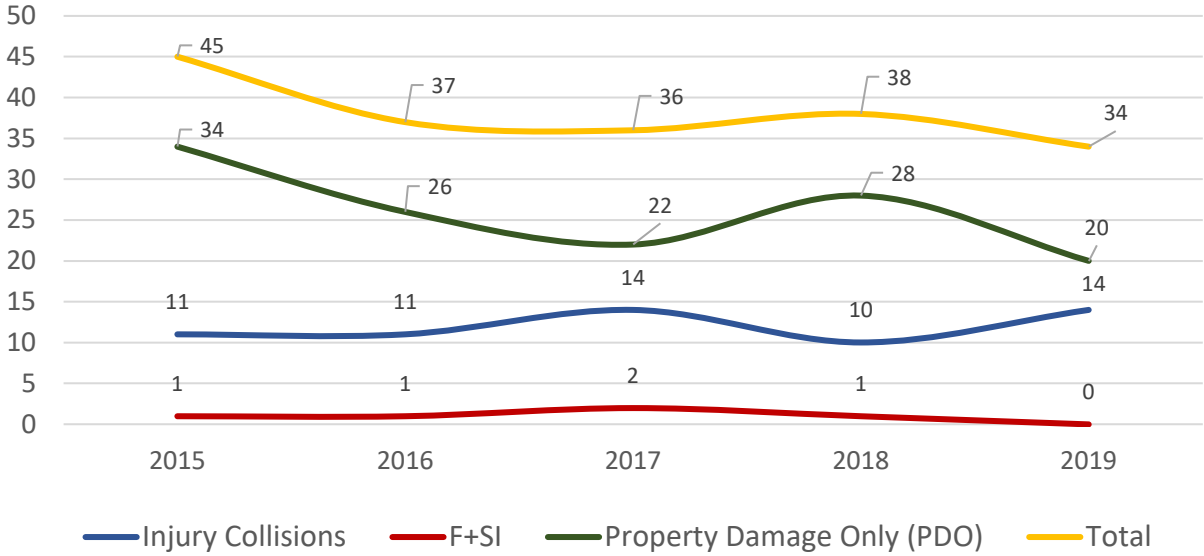
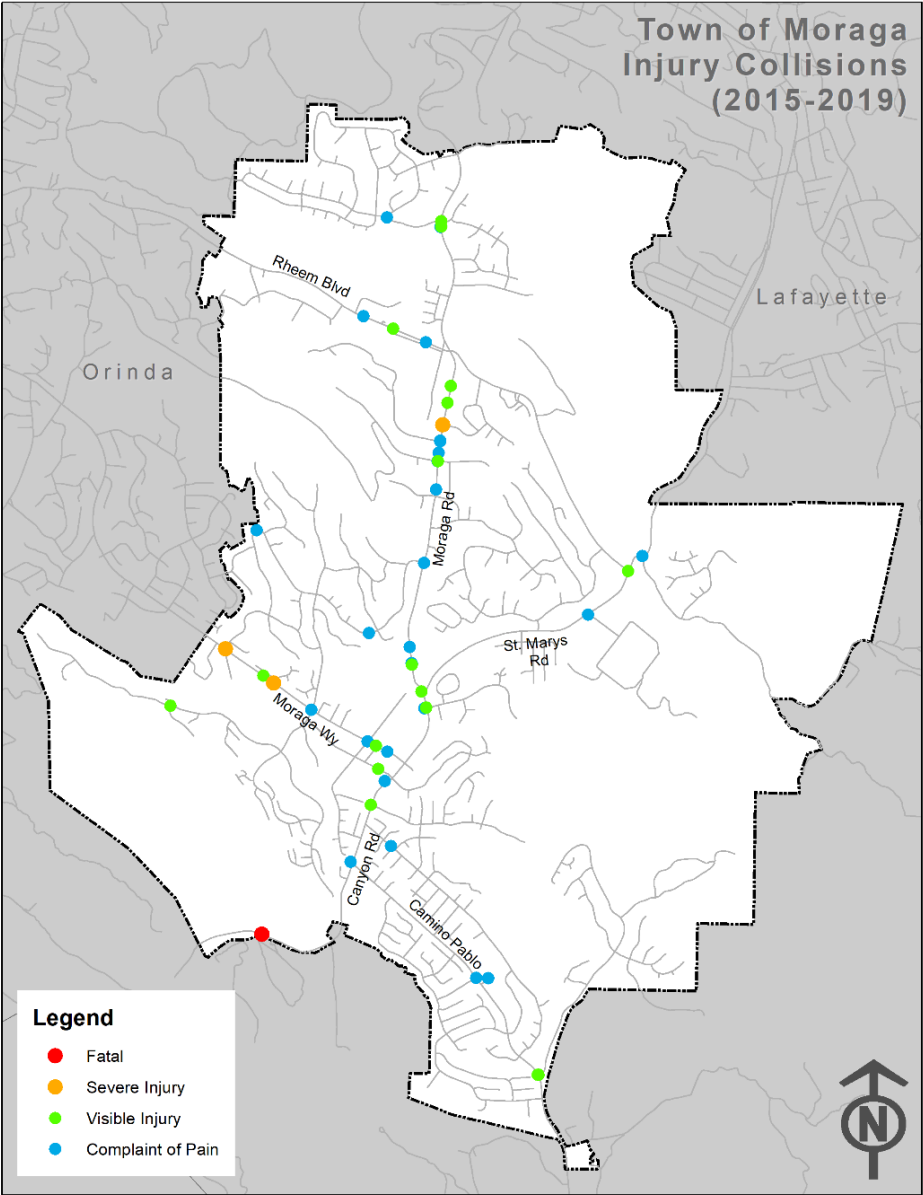


Community Input



- 128 comments received
- Map was promoted on Town website and social media

Collision Analysis Findings



- 190 collisions between 2015-2019
- 60 injury collisions, plus 5 Fatal and Severe Injury (KSI) collisions
- 47% of all injury collisions occurred on Moraga Rd/Canyon Rd corridor

Equivalent Property Damage Only (EPDO) Score

Collision Severity	EPDO Score
Fatal and Severe Injury Combined	165
Visible Injury	11
Complaint of Pain	6
Property Damage Only (PDO)	1

EPDO Score =

(165 x # of Fatal Collisions) +

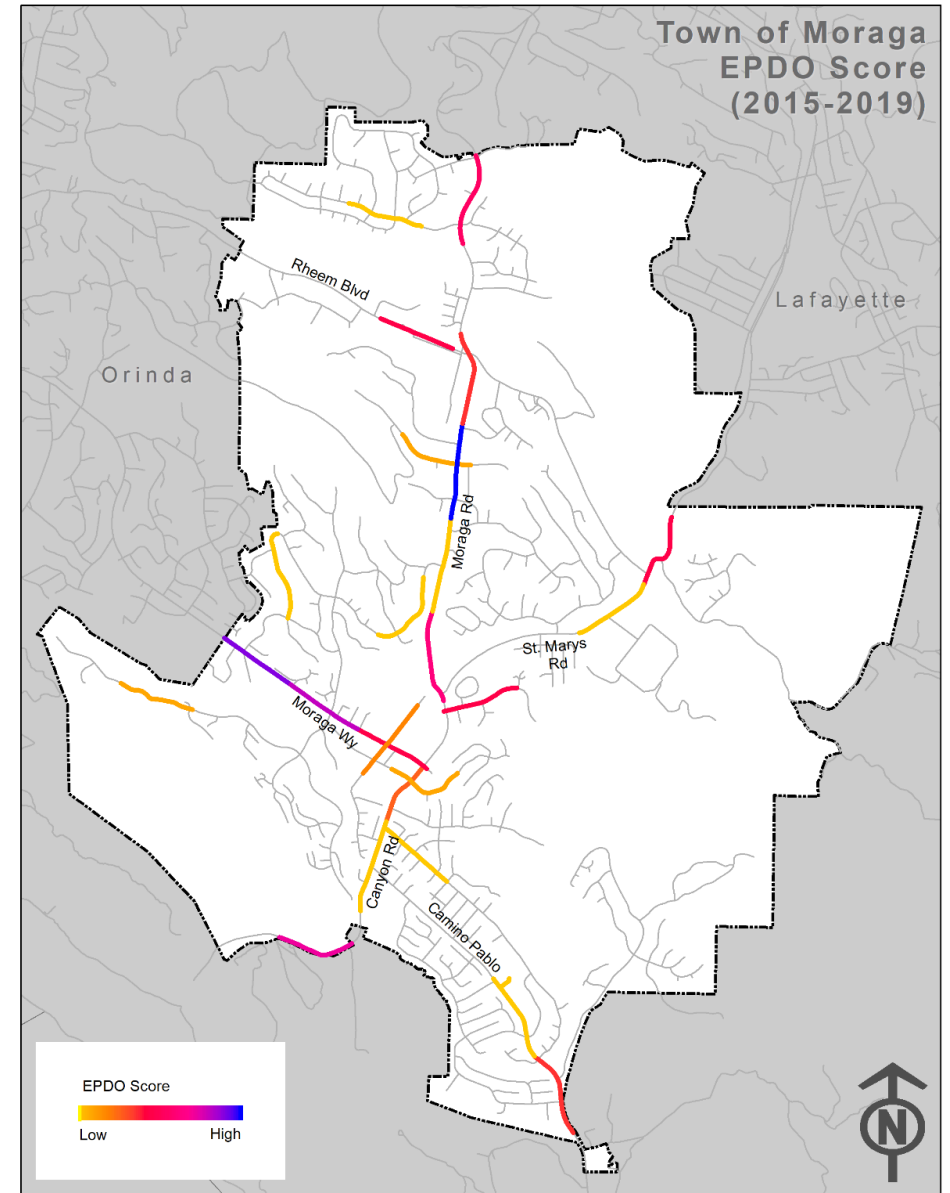
(165 x # of Severe Injury Collisions) +

(11 x # of Other Visible Injury Collisions) +

(6 x # of Complaint of Pain Collisions) +

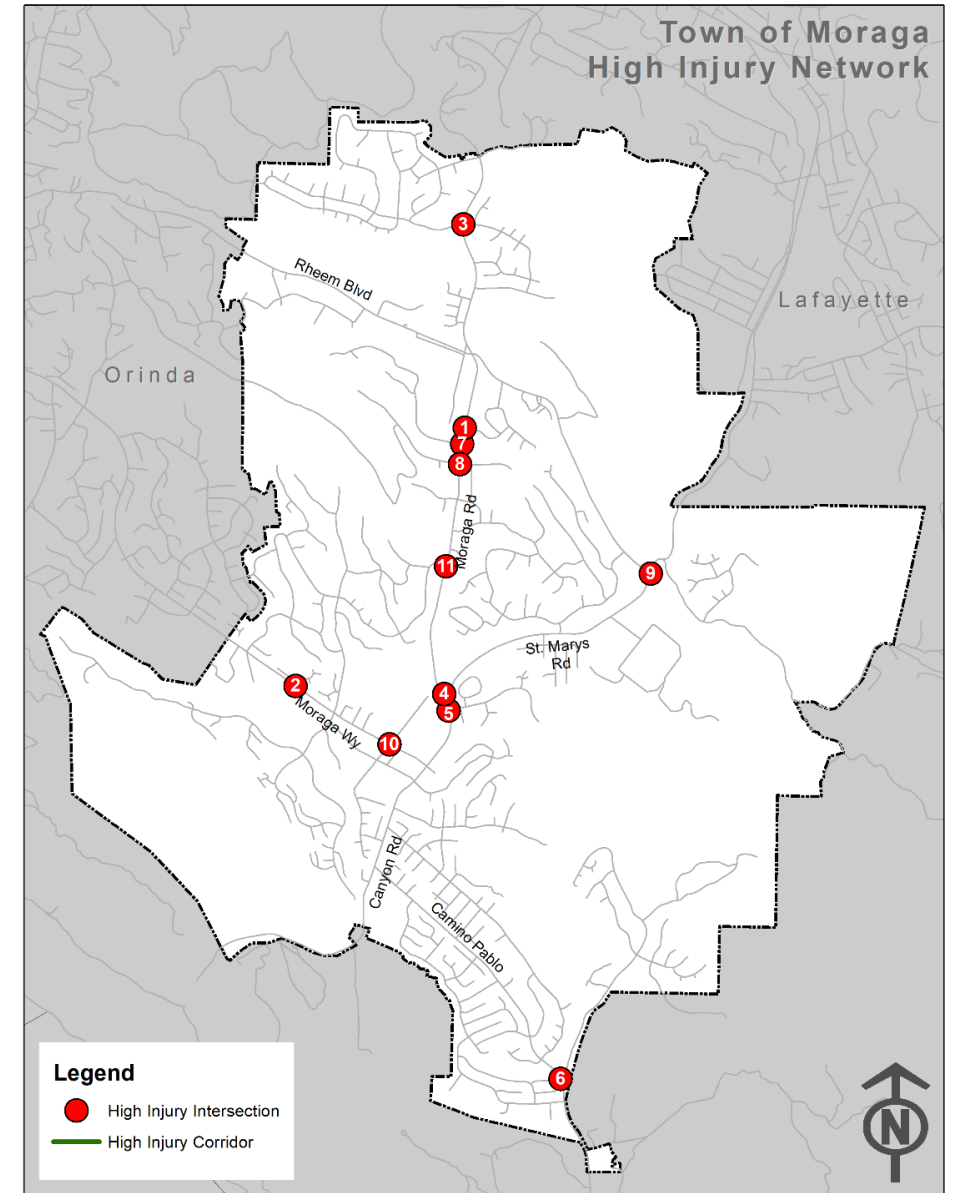
(1 x # of PDO Collisions)

(Source: Local Roadway Safety Manual 2020, Caltrans)



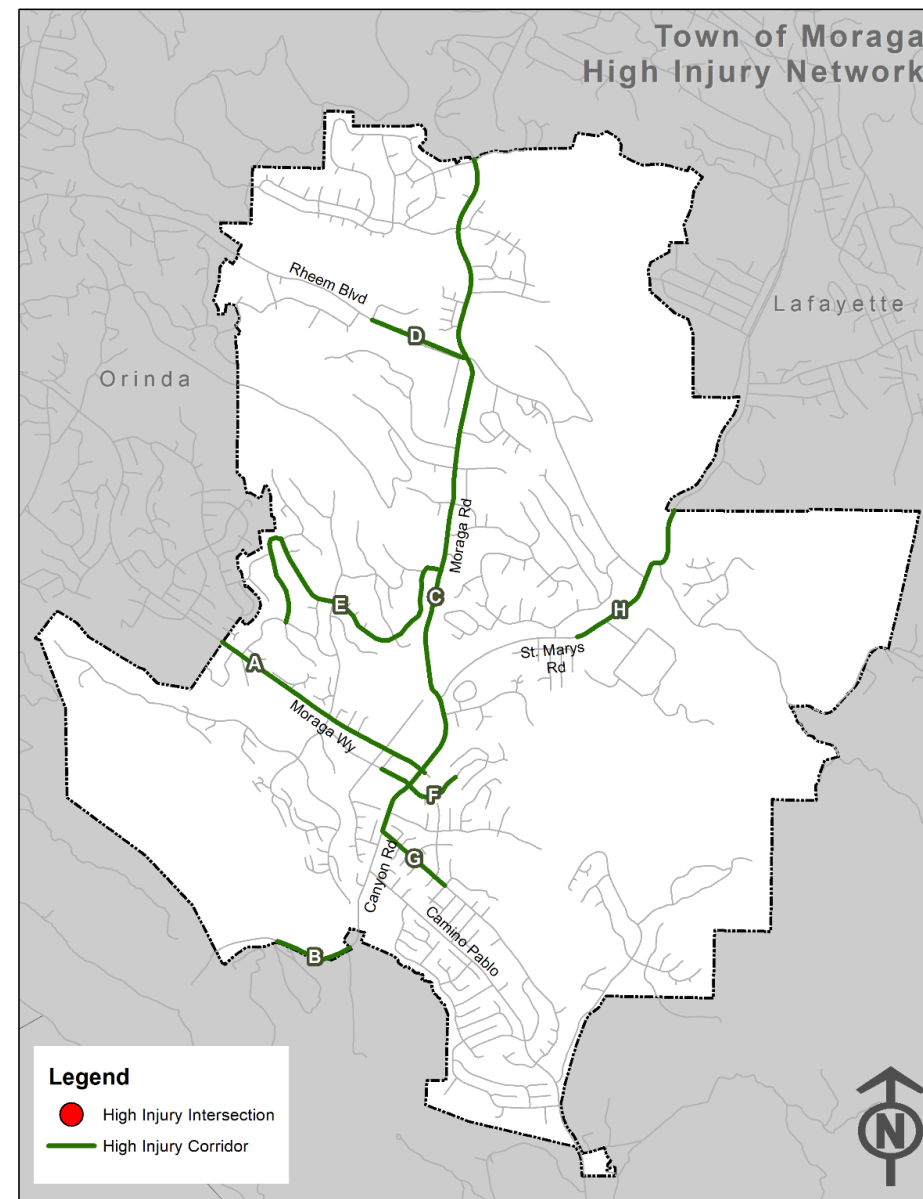
High-Injury Intersections

ID	Intersection	Total Collisions	F+SI Collisions	EPDO Score
1	Moraga Rd at Lucas Dr	6	2	374
2	Moraga Wy at Moraga Valley Ln	1	1	165
3	Moraga Rd at Campolindo Dr	3	0	28
4	Moraga Rd at St. Mary's Rd	3	0	28
5	Moraga Rd at Alta Mesa	3	0	23
6	Camino Pablo at Sanders Ranch Rd	2	0	22
7	Moraga Rd at Ascot Dr	3	0	18
8	Moraga Rd at Donald Dr	2	0	17
9	Rheem Blvd at St. Mary's Rd	2	0	17
10	Moraga Wy at School St	2	0	12
11	Moraga Rd at Corliss Dr	1	0	6



High-Injury Corridors

ID	Intersection	Total Collisions	F+SI Collisions	Length (miles)	EPDO Score
A	Moraga Wy: Town Limit to Moraga Rd	5	1	1.0	199
B	Canyon Rd: 300' E of Valle Vista Staging Area to Town Limit (East)	1	1	0.3	165
C	Moraga Rd/Canyon Rd: Larch Ln to Town Limit (North)	10	0	3.1	85
D	Rheem Blvd: La Salle Dr to Moraga Rd	2	0	0.4	12
E	Corliss Dr/Sullivan Dr: Hardie Dr to Moraga Rd	2	0	1.6	12
F	Country Club Dr: Viader Dr to 875' E of Southard Ct	1	0	0.4	11
G	Larch Ave: Canyon Rd to Baitx Ave	1	0	0.4	6
H	St. Mary's Rd: 500' E of Stafford Rd to Town Limit	1	0	0.8	6



List of Priority Emphasis Areas

- Intersection Safety

- Collisions within 250 feet of intersections

31% Broadside Collisions	47% Involved Pedestrian or Bike	42% Occurred on Moraga Rd
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- Address Hit Object Collisions

38% Occurred at Night	2 of 5 KSI Collisions	50% Roadway Segments
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- Address Broadside Collisions and Automobile Right of Way Violations

79% At Intersections	36% Involved a Bicycle	64% Involved Another Vehicle
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- Improve Bicycle and Pedestrian Safety

10% KSI Collisions	85% At Intersections	30% Occurred on Moraga Rd
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- Address Nighttime Collisions

38% Involved Alcohol	27% Improper Turning Violations	36% Involved Pedestrian or Bike
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- Improve Safety Around Schools

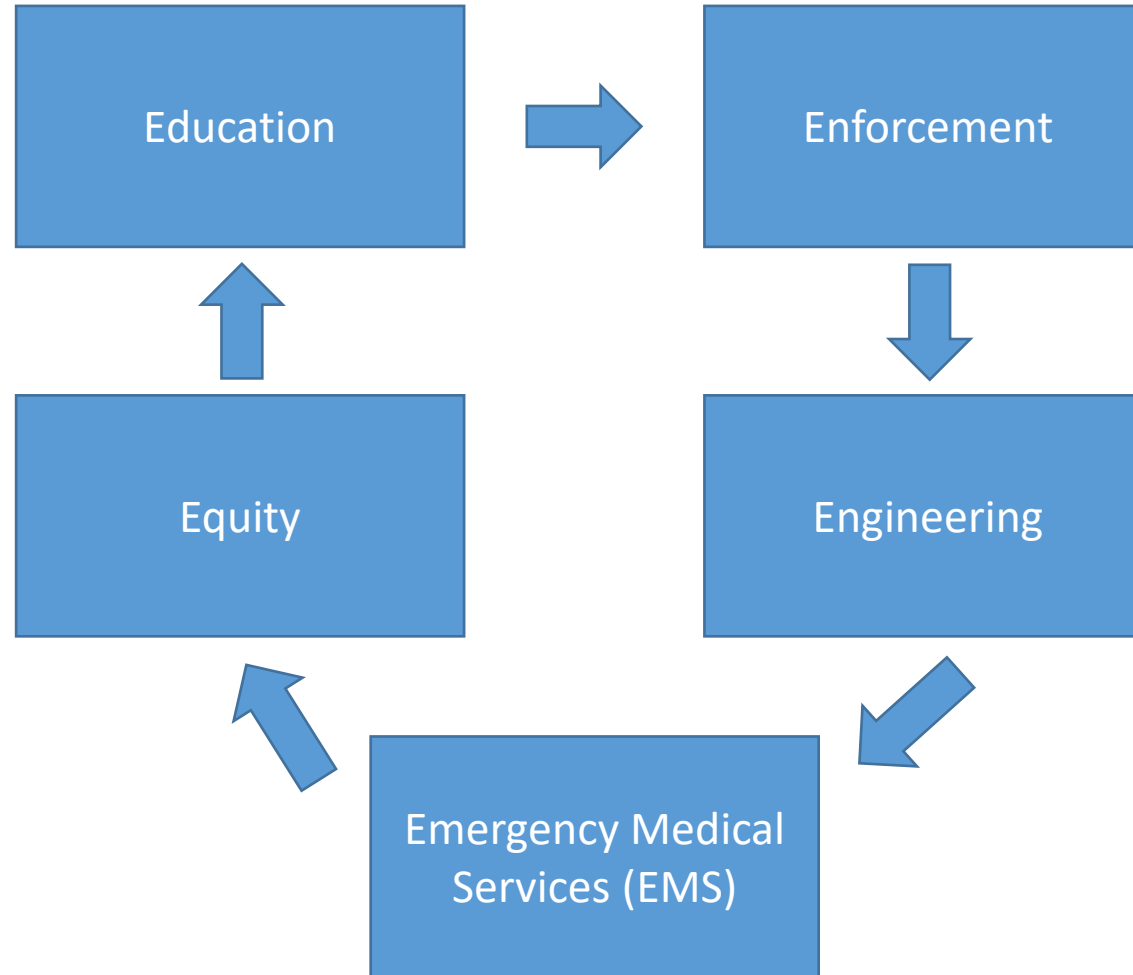
38% Involved Bike or Pedestrian	46% Occurred between 7am-9am or 4pm-6pm	31% Hit Object Collisions
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- Address Improper Turning Violations

38% Involved Fixed Object	38% Occurred at Night	75% At Intersections
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The 5 E's of Traffic Safety

- Conduct focused public information and education campaigns
- Create pocket guides and informational fliers with pedestrian laws, stop sign violations, etc.
- Safe Routes to School education programs
- Consideration of impact of collisions on disadvantaged communities



- Targeted enforcement at high risk intersections
- Place high priority on enforcement of violation type that contribute to the most fatalities and severe injuries
- HSIP eligible countermeasures
- E.g.: Improve intersection lighting, install median refuge island, install bulb outs, improving signs and striping

- Improve deployment to collision sites
- Ensure emergency routes are defined and clear

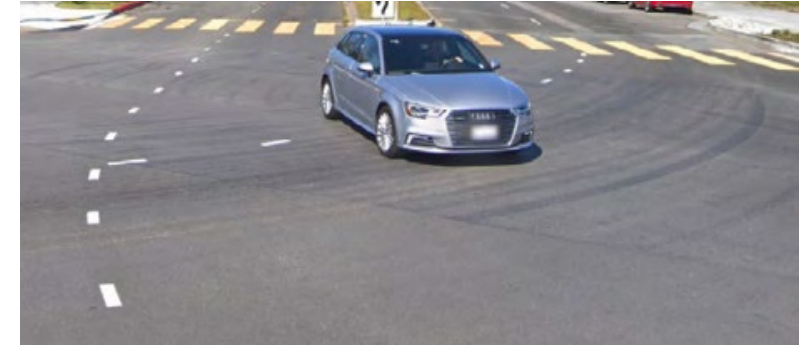
Draft Signalized Intersection Improvements



S02: Improve Signal Hardware



S11: Improve pavement friction



S09: Install raised pavement markers



S12: Install raised median on approaches



S20PB: Advance Stop Bar (Bicycle Box)



S21PB: Modify signal phasing to implement a Leading Pedestrian Interval (LPI)

Draft Unsignalized Intersection Improvements



NS01: Add intersection lighting



NS06: Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs



NS09: Install flashing beacons at or in advance of intersection



NS07: Upgrade intersection pavement markings



NS21PB: Install/upgrade pedestrian crossing (with enhanced safety features)



NS22PB: Install Rectangular Rapid Flashing Beacon

Draft Roadway Segment Improvements



R22: Install/Upgrade signs with new fluorescent sheeting (regulatory or warning)



R26: Install dynamic/variable speed warning signs



R34PB: Install sidewalk/pathway



R35PB: Install/upgrade pedestrian crossing (with enhanced safety features)



R33PB: Install Separated Bike Lane



R23: Install chevron signs on horizontal curves

Non-Engineering Strategies

- Education
 - Public information campaigns against unsafe driving habits
 - Bicycle/pedestrian education campaigns and/or Safe Routes to School
- Enforcement
 - Targeted enforcement
 - Advanced Roadside impaired Driving Enforcement (ARIDE) training
- EMS
 - Install emergency vehicle pre-emption systems
 - Traffic Incident Management Training
- Other
 - Prepare a Town-wide Traffic Calming Plan

Draft Safety Projects

Location	CM1	CM2	CM3	Cost per Location	Total Cost	B/C Ratio
Project 1 – Non-Signalized Intersections (Install/Upgrade Larger Stop Signs or other Intersection Regulatory/Warning Signs, Flashing Beacon as Advance Warning, and Install Rectangular Rapid Flashing Beacon)						
Moraga Rd at Lucas Dr	NS06		NS22PB	\$127,792	\$461,342	27.05
Moraga Wy at Moraga Valley Ln	NS06	NS09		\$80,892		
Moraga Rd at Alta Mesa	NS06	NS09		\$80,542		
Camino Pablo at Sanders Ranch Rd	NS06			\$8,512		
Rheem Blvd at St. Mary’s Rd	NS06	NS09		\$82,502		
Moraga Rd at Corliss Dr	NS06	NS09		\$81,102		
Project 2: Pedestrian Set Aside Application						
Moraga Wy: Town Limit to Moraga Rd	R35PB			\$31,220	\$243,712	N/A*
Moraga Rd/Canyon Rd: Larch Ln to Town Limit (North)	R35PB			\$129,570		
Rheem Blvd: La Salle Dr to Moraga Rd	R35PB			\$31,920		
Moraga Wy at Moraga Valley Rd	NS21PB			\$39,802		
Moraga Rd at Corliss Dr	NS21PB			\$11,200		

Draft Safety Projects

Location	CM1	CM2	CM3	Cost per Location	Total Cost	B/C Ratio
Project 3: Signalized Intersections (Improve Signal Timing, Install Raised Pavement Markers, and Install Leading Pedestrian Interval)						
Moraga Rd at Campolindo Dr	S21PB	S09	S03	\$16,450	\$82,712	26.26
Moraga Rd at St. Mary’s Rd	S21PB	S09	S03	\$16,240		
Moraga Rd at Ascot Dr	S21PB	S09	S03	\$16,870		
Moraga Rd at Donald Dr	S21PB	S09	S03	\$16,870		
Project 4: Non-Signalized Intersections (High Friction Surface Treatments and Intersection Lighting)						
Moraga Rd at Lucas Dr	NS12			\$147,854	\$458,370	28.41
Moraga Wy at Moraga Valley Ln	NS12	NS01		\$310,516		

Draft Safety Projects

Location	CM1	CM2	CM3	Cost per Location	Total Cost	B/C Ratio
Project 5: Roadway Segments: Install/Upgrade Signs with Fluorescent Sheeting and Install Delineators/Reflectors/Object Markers						
Moraga Wy: Town Limit to Moraga Rd	R22	R27		\$36,610	\$227,220	18.72
Canyon Rd: 300' E of Valle Vista Staging Area to Town Limit (East)	R22	R27		\$18,410		
Moraga Rd/Canyon Rd: Larch Ln to Town Limit (North)	R22	R27		\$117,145		
Rheem Blvd: La Salle Dr to Moraga Rd	R22	R27		\$7,595		
Country Club Dr: Viader Dr to 875' E of Southard Ct	R22	R27		\$12,915		
Larch Ave: Canyon Rd to Baitx Ave	R22	R27		\$10,185		
St. Mary's Rd: 500' E of Stafford Rd to Town Limit	R22	R27		\$13,440		
Corliss Dr/Sullivan Dr: Hardie Dr to Moraga Rd	R22	R27		\$10,920		

Draft Safety Project #1

Example Moraga Rd at Lucas Dr



Rectangular Rapid
Flashing Beacon

Install/Upgrade Larger STOP Signs or other
Intersection Regulatory/Warning Signs



Flashing Beacon as
Advance Warning



Example Rheem Blvd approaching St Mary's Rd



Draft Safety Project #2

Example
Moraga Rd at Corliss Dr



High Visibility Crosswalk



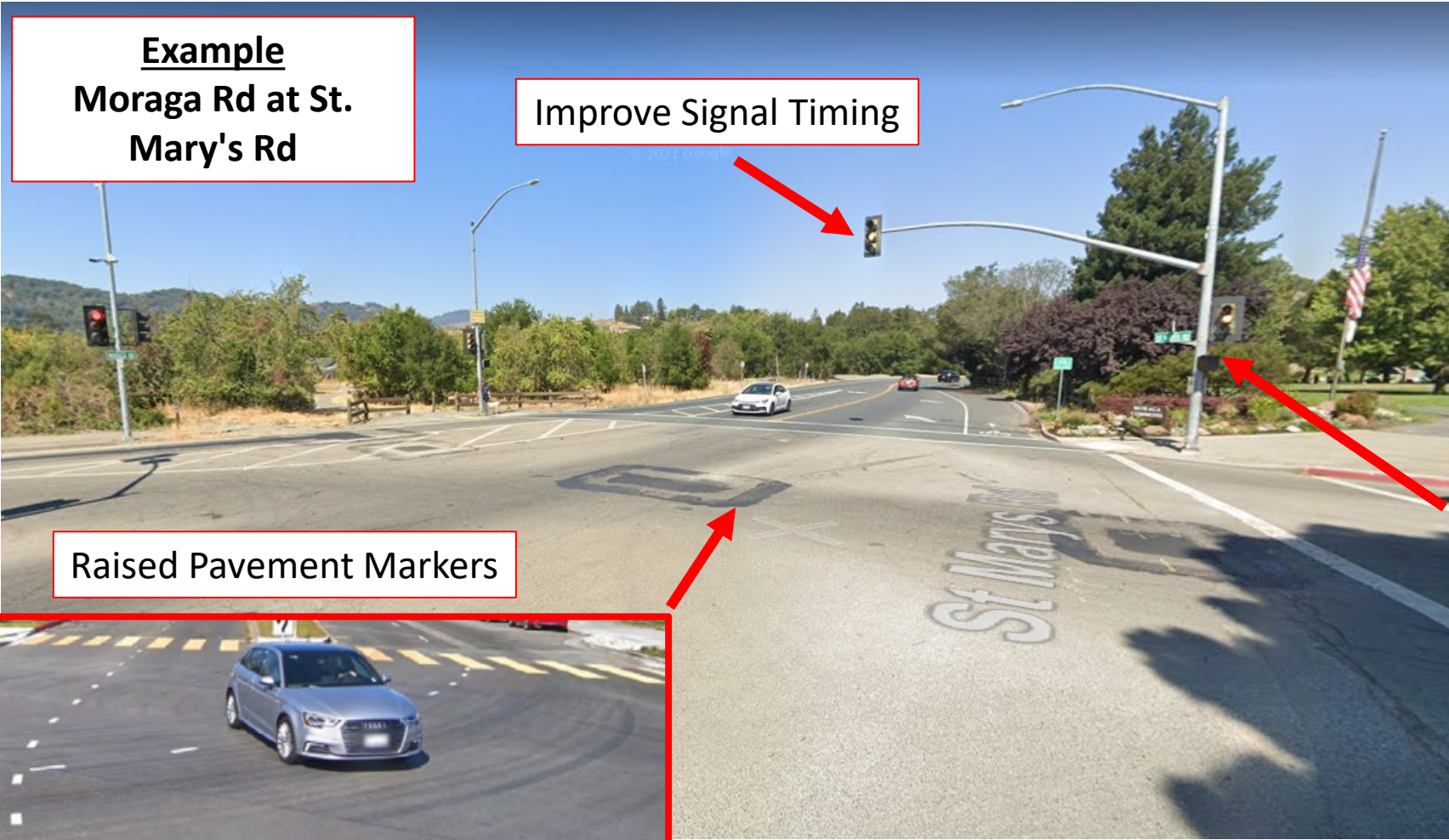
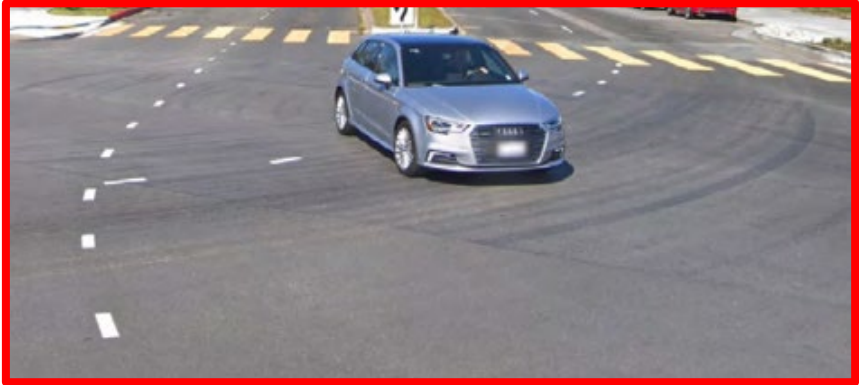
Draft Safety Project #3

Leading Pedestrian Interval

Example
Moraga Rd at St. Mary's Rd

Improve Signal Timing

Raised Pavement Markers



Draft Safety Project #4

Example
Moraga Rd at Lucas Dr

Intersection Lighting

High Friction Surface Treatment

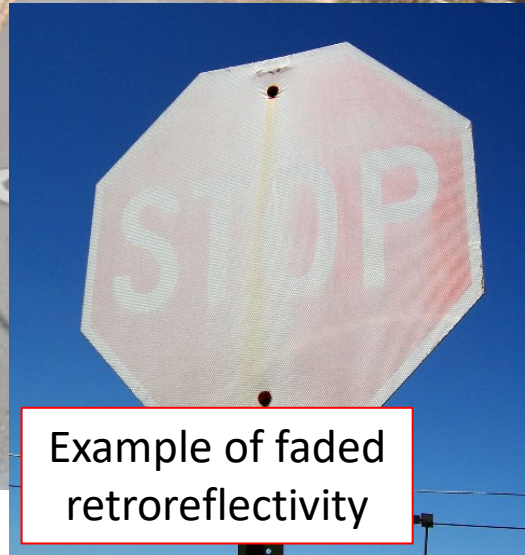


Draft Safety Project #5

Install Delineators, Reflectors, or
Object Markers

Example
Canyon Rd

New/Updated Signs with
Retroreflective Sheeting



Example of faded
retroreflectivity



Other Examples – School Zone Crossings

Los Gatos, CA



- High visibility crosswalk
- Advance stop bar
- Rectangular Rapid Flashing Beacons
- Median refuge island

Other Examples – School Zone Crossings

Dinuba, CA



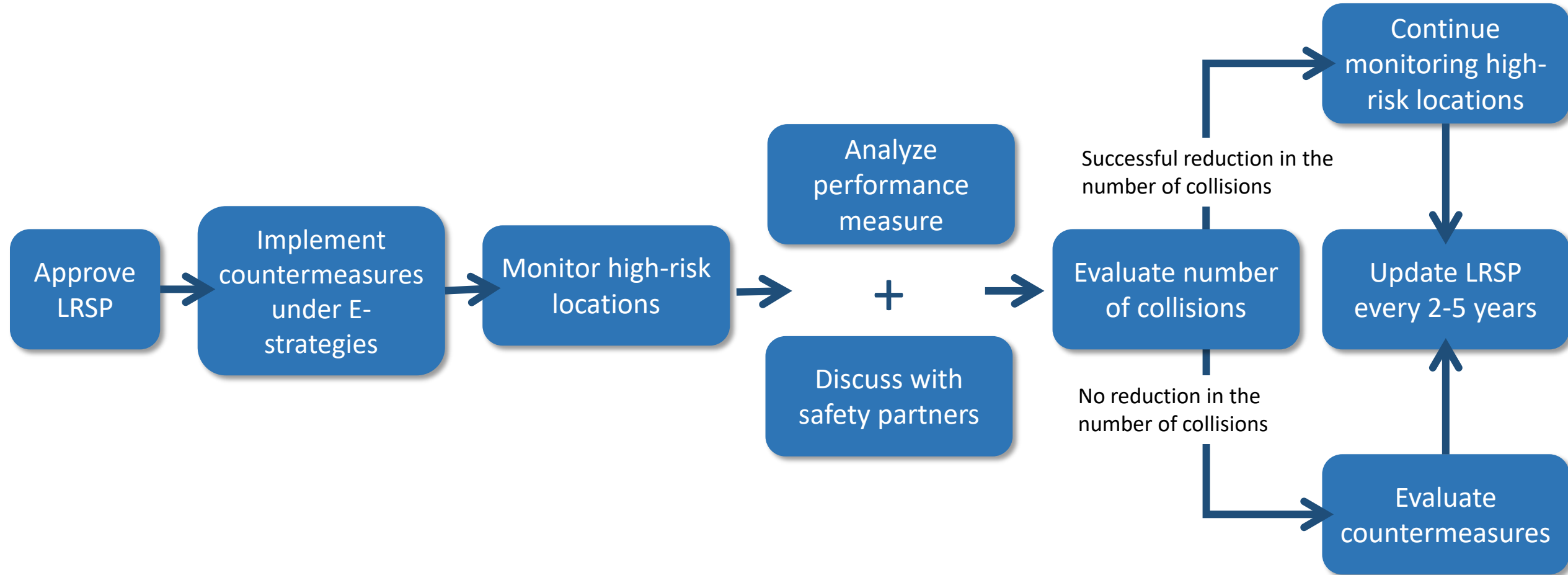
- Rectangular Rapid Flashing Beacons
- Intersection bulb-outs
- Median refuge island
- Yellow high visibility crosswalk

Sunnyvale, CA



- Yellow high visibility crosswalk
- Advance stop bar

Implementation



Questions to Council

- Does Council have any feedback on the high-injury intersections or roadway segments?
- Are there any questions or feedback on the priority emphasis areas?
- Are there any questions or feedback on the recommended countermeasures for the high-injury intersections or roadway segments?
 - *How about the non-engineering strategies?*
- Are there any questions or feedback on the safety projects?



Thank you!
Questions and Feedback

The background of the slide is a composite of two aerial photographs. The top half shows a suburban town with a golf course, a vineyard, and a large commercial building. The bottom half shows a suburban town with a golf course and a large commercial building. The text is centered in the middle of the slide, overlaid on a blue semi-transparent background.

Thank you!
Questions and Feedback