



City of Sunnyvale

Agenda Item

20-0712

Agenda Date: 8/20/2020

REPORT TO BICYCLE AND PEDESTRIAN ADVISORY COMMISSION

SUBJECT

Adoption of the Roadway Safety Plan

REPORT IN BRIEF

The preparation of the Roadway Safety Plan was funded through a Caltrans grant that staff applied for and its purpose is to identify projects that would successfully qualify for Highway Safety Improvement Program (HSIP) funding. The Roadway Safety Plan was developed to conform to existing City policies and plans such as the Vision Zero Plan. The Roadway Safety Plan includes a citywide traffic safety analysis to determine locations where traffic safety improvements would be beneficial. Based on the analysis, 20 potential project locations were identified, and concept plans were developed with traffic safety improvements. For each of the project locations, a benefit/cost ratio was calculated to determine if the proposed project would meet the minimum qualifications for HSIP grant funding and be competitive against other project applications. The Roadway Safety Plan will aid City staff in identifying which potential projects should be submitted as applications for future HSIP grant cycle funding.

BACKGROUND

The City of Sunnyvale Roadway Safety Plan was developed through a Systemic Safety Analysis Report Program (SSARP) grant from Caltrans. Caltrans accepted SSARP grant project applications in May 2017 and a total of 108 applications were received statewide. The City of Sunnyvale's application was one of the applications selected for funding. Caltrans approved \$250,000 in SSARP grant with a required \$30,000 in local matching funds. Caltrans published guidelines and standard requirements to be incorporated in the Roadway Safety Plan analysis and report. The requirements include a collision review, safety countermeasure development, project prioritization, and reporting details. The City's Roadway Safety Plan was developed to be in compliance with these requirements

A local roadway safety plan will be a requirement to apply for future HSIP grant project funding, which are selected through a competitive application process. HSIP is a Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance. A local roadway safety plan will be highly recommended for agencies submitting HSIP Cycle 10 applications due October 19, 2020. For HSIP Cycle 11 applications expected to open around April 2022, a local roadway safety plan will be a requirement for each agency submitting potential project applications for funding. The City's draft Roadway Safety Plan will satisfy the grant requirement which would allow the City to apply for future HSIP funded projects. Current and past HSIP funding projects in Sunnyvale include: East Remington Drive and Michelangelo Drive intersection improvements, Mathilda Avenue and Indio Way intersection improvements, and advance dilemma zones at various intersections.

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In July 2019, the Sunnyvale Vision Zero Plan was approved by City Council. Like the Roadway Safety Plan, the Vision Zero Plan included a collision analysis, safety countermeasures, and project prioritization. However, the Roadway Safety Plan includes an updated collision analysis, a more robust countermeasure review, and project list development with a benefit-cost analysis as required by Caltrans and the HSIP guidelines. In addition to the collision analysis and conceptual projects, the Vision Zero Plan included policies and programs that could be implemented to address traffic safety in the City. The Roadway Safety Plan was developed based on the concepts provided in the Vision Zero Plan and will be primarily used for HSIP grant funding applications.

Although the Roadway Safety Plan includes an updated collision analysis, it does not supersede the Vision Zero Plan as each plan serves a different purpose. Projects identified in the Vision Zero Plan will still be developed and submitted for possible funding through other grant sources such as the Transportation Development Act (TDA) or Active Transportation Program (ATP) funding.

The Roadway Safety Plan includes several potential traffic safety projects throughout the City. In addition, the report contains estimated project costs and the probability of a successful application to secure HSIP grant funding for each project listed. If the project is too costly to be competitive for HSIP grant funding, other funding sources may be sought to fully or partially implement each project. Funding sources other than HSIP funding may include other grants, partnerships with other agencies, and private development funding.

The City Council is scheduled to consider this item on September 29, 2020.

EXISTING POLICY

General Plan, Chapter 3, *Land Use and Transportation Element*:

- Goal LT-1: Coordinated Regional and Local Planning - Protect the quality of life, the natural environment, and property investment, preserve home rule, secure fair share of funding, and provide leadership in the region.
- Goal LT-2: Environmentally Sustainable Land Use and Transportation Planning and Development - Support the sustainable vision by incorporating sustainable features into land use and transportation decisions and practices.
- Goal LT-3: An Effective Multimodal Transportation System - Offer the community a variety of transportation modes for local travel that are also integrated with the regional transportation system and land use pattern. Favor accommodation of alternative modes to the automobile as a means to enhance efficient transit use, bicycling, and walking and corresponding benefits to the environment, person-throughput, and qualitative improvements to the transportation system environment.

Complete Streets Policy

Resolution No. 793-16 Complete Streets Policy (and Resolution No. 896-18 amendment to Resolution No. 793-16): the City...wishes to improve its commitment to Complete Streets and desires that its streets form a comprehensive and integrated transportation network promoting safe, equitable, and convenient travel for all users while preserving flexibility, recognizing community context, and using the latest and best design guidelines and standards.

Draft Active Transportation Plan

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The draft Active Transportation Plan (ATP) is an update to the 2006 Bicycle Plan, 2007 Pedestrian Safety and Opportunities Study, and the 2012 Comprehensive School Traffic Study. The ATP includes a Bicycle Plan, Pedestrian Plan, and Safe Routes to School Plan.

ATP Vision Statement

Sunnyvale is a Complete Streets Community where residents and commuters have the choice to bicycle and walk to meet their transportation needs on a connected, comfortable, and convenient network designed for all abilities and ages.

Vision Zero

Sunnyvale Vision Zero is a community-driven and data-driven initiative to eliminate preventable traffic fatalities and serious injuries. In the coming years, Sunnyvale will aim to reduce collisions through improved transportation infrastructure and programming, achieving a 50 percent reduction in fatalities and serious injuries by 2029 and continued progress towards zero in the ten years that follow.

Guiding Principles

1. Traffic deaths are unacceptable and preventable.
2. Transportation options should be safe for all users, for all modes of transportation, in all communities, and for people of all ages and abilities.
3. Safety is a primary consideration in the development of transportation projects for all users.
4. Actions toward Vision Zero should embody a quantitative, collaborative, and equitable approach.
5. Human error is inevitable and unpredictable; the transportation system should be designed to anticipate error and minimize injury severity.
6. Speed is a fundamental predictor of collision severity survival. The transportation system should be designed for speeds that safely accommodate all modes of travel.
7. Ongoing evaluation should measure performance against the Sunnyvale Vision Zero Plan objectives.

ENVIRONMENTAL REVIEW

The action being considered does not constitute a “project” within the meaning of the California Environmental Quality Act (“CEQA”) pursuant to CEQA Guidelines section 15378(a) as it has no potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. Individual projects developed from this plan will undergo project level CEQA analysis.

DISCUSSION

The Roadway Safety Plan was developed to provide guidance for future projects that will improve traffic safety. The plan was funded through a Caltrans Systemic Safety Analysis Report Program (SSARP) grant in preparation of satisfying project application requirements for future grant cycles of the Highway Safety Improvement Program (HSIP). The SSARP grant has specific guidelines that are used to identify projects that will address traffic safety issues. The goal of the systemic safety analysis is to be able to apply traffic safety improvements that are identified for a specific location systemically to other locations that may have similar traffic safety issues.

The Roadway Safety Plan includes an analysis of most roadways within the borders of the City of Sunnyvale including Santa Clara County expressways, El Camino Real (State Route 82), and

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intersections at freeway ramps. Some of these roadways and intersections are maintained and operated by jurisdictions other than the City of Sunnyvale. However, they were included in the plan to obtain a full picture of the traffic safety issues occurring throughout the City. It is unlikely that the City will be able to independently submit applications for HSIP grant funding for project locations that are not within the jurisdiction of the City, but it may be possible to have a joint partnership with the controlling agency to apply for grant funding or obtain funding from other sources. Freeways are not included in the plan since they are a regional facility maintained by the state. Private roadways are also not included since they are the responsibility of their respective owners.

Background

The City of Sunnyvale has several policies and plans aimed to improve traffic safety for all roadway users. The General Plan Land Use and Transportation Element includes policies relating to sustainable and effective alternative transportation modes. The City has a Complete Streets policy that strives for a safe and equitable transportation network. In addition, the draft Active Transportation Plan was designed to provide residents and commuters the ability to bike and walk on a connected, comfortable, and convenient network designed for all abilities and ages. Lastly, the City's Vision Zero Plan includes several policies to improve traffic safety and reduce the number of severe injury collisions. The Roadway Safety Plan was prepared to be complementary with the goals of these policies and plans.

The development of the Roadway Safety Plan was partially based on the analysis and procedures included in the Vision Zero Plan. The Vision Zero Plan included a thorough traffic safety review in development of the High Injury Network and priority project locations. The High Injury Network identified roadway corridors throughout the City that accounted for 60% of the collisions that lead to a severe injury or fatality. The locations with the most identified severe collisions were reviewed and lead to the identification of ten priority project locations. The ten locations were not necessarily the top ten highest injury collision locations but were a representative sample of locations throughout the City on various types of roadways with a variety of traffic safety issues and history of collisions. The Roadway Safety Plan reviewed these locations and others around the City to identify the top locations based on the number of crashes. This is so we can concentrate efforts on reducing the highest number of crashes which scores better in HSIP grant funding evaluations. Some improvements identified for Priority Project locations in the Vision Zero Plan are better suited for other funding sources such as Congestion Management and Air Quality (CMAQ) Improvement Program, Active Transportation Program (ATP), SB-1 Transportation Funding, Santa Clara County Measure B Funding, Metropolitan Transportation Commission (MTC) One Bay Area Grant (OBAG) Program, Caltrans Sustainable Transportation Planning Grant Program, and California Office of Traffic Safety (OTS) grants.

The following is a list of the Vision Zero Plan Priority Project Locations and status in the Roadway Safety Plan:

1. El Camino Real between S. Mary Avenue and S. Mathilda Avenue - Not included in the Roadway Safety Plan as this segment may be better suited for funding from other grant sources.
2. El Camino Real between S. Taaffe Street and S. Fair Oaks Avenue - Intersection improvements at El Camino and Cezanne are included in the Roadway Safety Plan as an example of possible joint partnership with Caltrans on State operated facility. Traffic safety

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improvements at other locations on El Camino Real may involve a joint partnership with Caltrans and may be more suitable for other types of grant funding other than HSIP applications.

3. El Camino Real, E. Fremont Avenue, and S. Wolfe Road (intersection) - Not included in the Roadway Safety Plan since this segment is better suited for funding through other sources due to the high project costs. The future improvements planned for this area will be funded or implemented with development activities.
4. Remington Drive/Fair Oaks Avenue between Iris Avenue and Manet Drive - Not included in the Roadway Safety Plan since the major intersection in this segment, Fair Oaks Avenue and El Camino Real, staff is analyzing this segment as part of a possible submission under the current HSIP grant application cycle.
5. El Camino Real between Henderson Avenue and Helen Avenue - Not included in the Roadway Safety Plan since this segment is better suited for other grant sources.
6. N. Mathilda Avenue and W. Maude Avenue (intersection) - Intersection is currently undergoing improvements through the Active Transportation Program grant.
7. N. Fair Oaks Avenue between Balsam Avenue and E. Taylor Avenue - Fair Oaks Avenue and Taylor Avenue are included in the Roadway Safety Plan and is currently being reviewed for possible submission for this HSIP grant application cycle.
8. Fremont Avenue between Sunnyvale-Saratoga Road and Floyd Avenue - Segment is included in the Roadway Safety Plan. A number of intersection improvements identified in the Vision Zero Plan at Fremont Avenue and Manet Drive/Bobwhite Avenue will be funded through Transportation Development Act, Article 3 funding. The corridor improvements will happen with private developments or with other grants.
9. Homestead Road between Heron Avenue and Wolfe Road - Not included in Roadway Safety Plan since intersection operations are controlled by City of Cupertino. The roadway is jointly maintained by City of Sunnyvale and City of Cupertino.
10. Mary Avenue between Remington Drive and Fremont Avenue - Not included in Roadway Safety Plan since roadway modifications were installed in 2017 including Class II bicycle facilities which may improve safety. The improvements at this intersection are identified in the draft ATP and will be constructed using other potential grant funding.

Improvements identified in Vision Zero for intersections on El Camino Real may be completed through several means outside of HSIP grant funding including a joint project partnership with Caltrans, funding from private developments, and the implementation of modifications included in the in-progress El Camino Real Corridor Specific Plan. Examples of recent El Camino Real intersection improvements within Sunnyvale include the following:

- El Camino Real & Sunnyvale-Saratoga Avenue - removal of southwest and southeast corner “pork chop” islands (Caltrans project with City support)
- El Camino Real & Fair Oaks Avenue - removal of northwest corner “pork chop” island (developer funded)

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- El Camino Real & Helen Avenue - installation of HAWK signal (Caltrans project with City support)
- El Camino Real & Poplar Avenue - installation of pedestrian improvements (Caltrans project with City support)
- El Camino Real & Henderson Avenue - installation of pedestrian improvements (Caltrans project with City Support)

Data Analysis and Results

The main component of the Roadway Safety Plan is to identify locations with an elevated risk of traffic collisions based on a review of recent collision history. The collision data that was analyzed was a five-year period that ranged from July 1, 2013 to June 30, 2018. For reference, the Vision Zero Plan included a collision data range for the five-year period from January 1, 2012 to December 31, 2016.

The data included in the Roadway Safety Plan shows a steady increase in total number of collisions each analysis year. The data also shows the following results:

Top collision intersections - Signalized Intersections

North Mathilda Avenue and West Maude Avenue (70 collisions)

Central Expressway and Mary Avenue (69 collisions)

El Camino Real and Wolfe Road (66 collisions)

Unsignalized Intersections

South Mary Avenue and West Olive Avenue (26 collisions)

El Camino Real and Sycamore Terrace (25 collisions)

Lawrence Expressway and 101 Southbound On-ramp (24 collisions)

Top collision roadway segments by type -

- Expressway: Central Expwy from Wolfe Road east ramps to Wolfe Road west ramps (51 collisions)
- Class I Arterial: El Camino Real from Maria Lane to Fair Oaks Avenue (21 collisions)
- Class II Arterial: Wolfe Road from Iris Avenue to Reed Avenue (13 collisions)
- Commercial/Industrial Collector: Maude Avenue from Pastoria Avenue to Mathilda Avenue (10 collisions)
- Residential Collector: Hollenbeck Avenue from Homestead Road to Grand Coulee Avenue (15 collisions)
- Local Roadway: Acalanes Drive from McKinley Avenue to Bernardo Avenue (6 collisions)

In order to compare the level of existing traffic safety at locations within Sunnyvale as well as other locations outside of Sunnyvale, a standardized methodology established by the Highway Safety Manual developed by the American Association of State Highway and Transportation Officials

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(AASHTO) was followed. The process involves calculating the crash rate based on the number of collisions and traffic volumes at each location. The crash rate for each location is then compared to the Critical Crash Rate (CCR). The CCR is based on a formula that determines the typical crash rate that would be expected for a location with similar characteristics. For locations with crash rates higher than the CCR, the location would be a good candidate for traffic safety improvement projects.

There are several national sources that list various types of traffic safety features that can be implemented to improve safety. These features are vigorously studied to determine their expected reduction in the quantity or severity of traffic collisions. The efficacy value correlating to the reduction in collisions that each traffic safety countermeasure is expected to achieve is called the Crash Modification Factor (CMF) or Crash Reduction Factor (CRF). Ideally, the number of collisions would decrease by the factor for each feature installed.

The traffic features that would provide a safety benefit in Sunnyvale are categorized in the Safety Countermeasures Toolbox. The Safety Countermeasures Toolbox include the following categories with a few examples of what is included in each category:

- A. Signal Timing and Phasing
 - Additional traffic signal heads or protected movements
 - Extending green time for bicyclists or walk time for pedestrians
- B. Intersection and Roadway Design
 - New sidewalks
 - Raised medians
 - Roadway reallocations (road diet)
- C. Signs and Markings
 - Advance stop bar
 - Parking restrictions
 - Speed feedback sign
- D. Bikeway Design
 - Bike box
 - Class II and IV bike facilities
 - Green bike facility conflict zone markings
- E. Pedestrian Crossings
 - Pedestrian hybrid beacon
 - Pedestrian refuge island
 - Raised crosswalks
- F. Other
 - Access and driveway management
 - Bus stop locations
 - Street lighting
- G. Low-cost and Quick Build
 - Raised centerline
 - Paint and flexible post turn radius reduction

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- Paint and flexible post separated bike facilities

Based on the collision analysis, 20 project locations were identified that would benefit from potential traffic safety improvements. The locations were chosen because they represent a variety of roadway types throughout Sunnyvale and do not have a future fully funded project that includes traffic safety improvements. For each project location, a conceptual improvement plan was developed with features to address specific traffic safety issues. Based on the collision analysis and the cost estimate to incorporate the identified improvements a benefits/cost (B/C) ratio was developed for each project location. A higher B/C ratio is better as it indicates a larger benefit for every dollar spent.

The project locations include the following with the B/C ratio in parentheses (in order of highest to lowest B/C ratio for each location type):

8 Signalized Intersections

1. Location A - El Camino Real & Cezanne Drive (39.39)
2. Location D - Fair Oaks Avenue & Olive Avenue (8.37)
3. Location E - Wolfe Road & Kifer Road (6.26)
4. Location C - Wolfe Road & Arques Avenue (5.22)
5. Location B - Fair Oaks Avenue & Maude Avenue (5.21)
6. Location G - Hollenbeck Avenue & Danforth Drive (4.15)
7. Location H - Wolfe Road & WB Central Expressway Ramps (1.70)
8. Location F - Caribbean Drive & Moffett Park Drive (N/A - Cost for construction is beyond scope of HSIP grant)

6 Unsignalized Intersections

1. Location K - Fair Oaks Avenue & Taylor Avenue (234.98)
2. Location N - Evelyn Avenue & Pastoria Avenue (53.94)
3. Location L - Bernardo Avenue & Ayala Drive (42.37)
4. Location M - Evelyn Avenue & Murphy Avenue (8.61)
5. Location J - Fremont Avenue & Eleanor Way (7.21)
6. Location I - Mary Avenue & Olive Avenue (5.06)

6 Roadway Segments

1. Location T- Hollenbeck Avenue - Bend Drive to The Dalles (16.11)
2. Location O - Fremont Avenue - Sunnyvale-Saratoga Road to Bobwhite Avenue/Manet Drive (14.69)
3. Location P - Arques Avenue - Wolfe Road to Lawrence Expressway (6.93)
4. Location S - Sandia Avenue - Lawrence Expressway to Wildwood Avenue (4.30)
5. Location Q - Sunnyvale-Saratoga Road - El Camino Real to Mathilda Avenue (2.58)

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6. Location R - Reed Avenue - Wolfe Road to Evelyn Avenue (0.86)

The previous HSIP grant released in 2018 (Cycle 9) had a minimum B/C threshold of 7.5 for project applications. The current HSIP grant (Cycle 10) has a minimum B/C threshold of 3.5 with a project deadline of October 19, 2020. Based on the minimum thresholds, the City can determine the probability of successfully obtaining the HSIP grant for each project.

FISCAL IMPACT

None for approving the Roadway Safety Plan. Implementation of various projects listed in the plan will be considered individually through the City's budget process.

PUBLIC CONTACT

Public contact was made through posting of the Bicycle and Pedestrian Advisory Commission agenda on the City's official-notice bulletin board, on the City's website, and the availability of the agenda and report in the Office of the City Clerk.

Public outreach efforts during the project development process also included the following:

- Two community workshops (April 22, 2019 and Jan. 22, 2020)
- Online project feedback (Feb. 2020)
- Two technical advisory group meetings with government agency representatives (March 26, 2019 and Dec. 11, 2019)
- Two BPAC meetings (March 21, 2019 and Dec. 19, 2019)

ALTERNATIVES

1. Recommend to City Council to Adopt the Roadway Safety Plan.
2. Recommend to City Council to Adopt the Roadway Safety Plan with modifications.
3. Other direction as provided by the Commission.

RECOMMENDATION

Alternative 1: Recommend to City Council to Adopt the Roadway Safety Plan.

Prepared by: Ralph Garcia, Senior Transportation Engineer

Reviewed by: Chip Taylor, Director, Public Works

Reviewed by: Teri Silva, Assistant City Manager

Approved by: Kent Steffens, City Manager

ATTACHMENTS

1. Reserved for Report to Council
2. Draft Roadway Safety Plan Report
3. Link to Draft Roadway Safety Plan Appendix