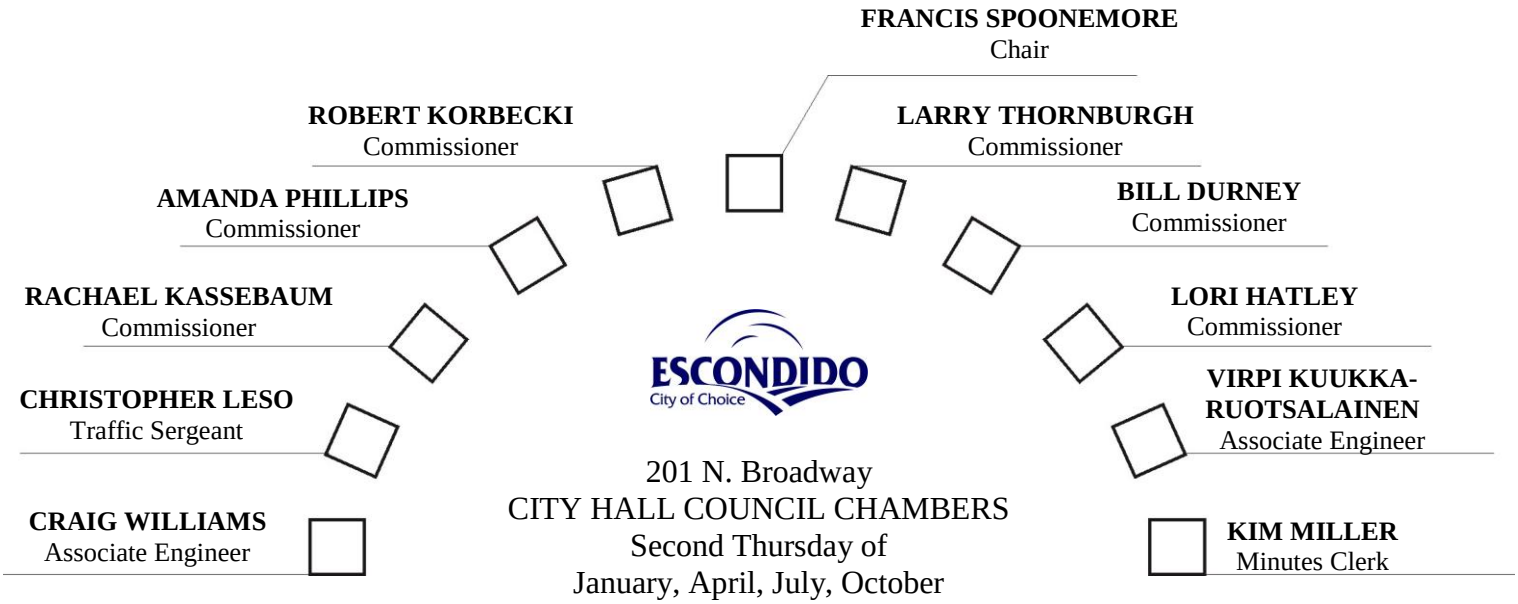
CITY OF ESCONDIDO

Transportation & Community Safety Commission



201 N. Broadway
CITY HALL COUNCIL CHAMBERS
Second Thursday of
January, April, July, October
3:00 p.m.

AGENDA
July 9th, 2020

A. FLAG SALUTE

B. ROLL CALL AND DETERMINATION OF QUORUM, VICE-CHAIR

C. ORAL COMMUNICATIONS* (At this time, members of the public are encouraged to speak to the Commission concerning items not already on this agenda. A time limit of three [3] minutes per speaker and a total time allotment of fifteen [15] minutes will be observed.)

The Brown Act provides an opportunity for the members of the public to directly address the Commission on any item of interest to the public, before or during the Commission's consideration of the item. If you wish to speak regarding an agenda item, please fill out a speaker's slip and give it to the minute's clerk who will forward it to the Chairman.

If you wish to speak concerning an item not on the agenda, you may do so under "Oral Communications" which is listed on the agenda.

The City of Escondido recognizes its obligation to provide equal access to public meetings to those qualified individuals with disabilities. Please contact the Human Resources Department (839-4643) with any requests for reasonable accommodation, to include sign language interpreter, at least twenty-four (24) hours prior to the meeting.

D. APPROVAL OF MINUTES OF January 9th, 2020 MEETING

E. CONSENT ITEMS – None.

F. NEW BUSINESS

1. Review and Discuss Implementation of the 2020/2021 Traffic Signal Priority List (TSPL) and the Left Turn Priority List (LTPL)

   Source: Staff

   Recommendation: Approve Staff Recommendation

   Previous action: Commission review and approval

2. 2020/2021 Traffic Management Project List (TMPL) Preliminary List of Projects

   Source: Staff

   Recommendation: Approve Staff Recomnedation

   Previous action: None

G. OLD BUSINESS

1. An overview of various projects involving the City.

   Source: Staff

Written or verbal reports may be presented on the following topics:

a. Traffic Signals in Design: Felicita/Escondido Blvd signal modification protected left-turns – Design complete, part of ATP Fund project. Juniper St/Felicita-17th Ave. protected left-turns, part of ATP Fund project. Two new signals: Country Club Ln/Gary Ln and Country Club Ln/Nutmeg St (The Villages). Signal Modifications: El Norte Pkwy/Country Club Ln and El Norte Pkwy/Nutmeg St. (The Villages).

b. Traffic Signals – Completed Projects: Hotel Traffic Signal on La Terraza Blvd. El Norte/Bike Path crossing over flood control channel with Bridge Widening Project (June 2020), Gateway Project adjacent to Transit Center two (2) pedestrian crossing signals (June/July 2020), Signal Modification for Quince/Valley left turns with California Trust Bank -Project. Under Construction: El Norte/E. Lincoln Avenue (Henry's Ranch).

c. FY19/20 TMPL Project Updates – Lincoln/Ash Crosswalk Improvements and Citrus/Oak Hill Crosswalk Improvements with RRFB: under construction. Countdown pedestrian heads were installed at 5 intersections. APS was installed at CCP/El Norte Parkway.

d. El Norte Widening – Project. June 2020.

H. SCHOOL AREA SAFETY

a. Del Dios Academy – Bond Improvements. Signing/Striping design and crosswalk improvements incl. RRFB for 9th Avenue reviewed. Also, City Street Project refreshed crosswalks, added signage and buffers to existing bike lanes on Valley Parkway.

b. Juniper Elementary. Bond Improvements to improve parking lot, traffic flow. City Grant project to improve sidewalk, relocate student crosswalk and install RRFB. Two signal modifications for protected left-turns.

c. Del Lago Academy. City Street Project. Bicycle safety improvements, signage and buffers added to bike lane on Citracado Pkwy between Valley Pkwy and Greenwood Place.

I. COUNCIL ACTION* (A briefing on recent Council actions on Commission related items.)

a. NONE

J. ORAL COMMUNICATIONS* (At this time, members of the public are encouraged to speak to the Commission.)

K. TRANSPORTATION COMMISSIONERS* (Commissioners may bring up questions or items for future discussion.)

L. ADJOURNMENT

*In order for the Transportation Commission to take action or conclude discussion, an item must appear on the agenda which is posted 72 hours in advance of the meeting. Therefore, all items brought up under the categories marked with an asterisk (*) can have no action. Such items can be referred to staff or scheduled for a future agenda.

AVAILABILITY OF SUPPLEMENTAL MATERIALS AFTER AGENDA POSTING: Any supplemental writings or documents provided to the Commission regarding any item on this agenda will be made available for public inspection in the Engineering Office located at 201 N. Broadway during normal business hours, or in the Council Chambers while the meeting is in session.

CITY OF ESCONDIDO

MINUTES OF THE REGULAR MEETING OF THE TRANSPORTATION AND COMMUNITY SAFETY COMMISSION

January 9, 2020

The regular meeting of the Escondido Transportation and Community Safety Commission was called to order at 3:04 p.m., Thursday, by Vice Chair McManus, in the City Council Chambers, 201 North Broadway, Escondido, California.

Commissioners present: Vice Chair McManus, Commissioner Thornburgh, Commissioner Durney, Commissioner Korbecki, and Commissioner Kassebaum,

Commissioners absent: Chair Spoonmore.

Staff present: Julie Procopio, Director of Engineering Services; Owen Tunnell, Assistant City Engineer, Ali Shahzad, Associate Engineer/Traffic Division; Miriam Jim, Associate Engineer, Virpi Kuukka-Ruotsalainen, Engineering II, Christopher Leso, Traffic Sergeant, and Kimberlianne Miller, Minutes Clerk

ORAL COMMUNICATIONS:
None

CONSENT ITEMS: None

ACTION:

MINUTES:
Moved by Vice Chair McManus, seconded by Commissioner Durney, to approve the minutes of the October meeting. Motion carried unanimously.

NEW BUSINESS:

1. Traffic Signal Permitted Protected Left Turn Phasing (PPLT)

Ali Shahzad provided an overview of the PPLT, PPLT Phasing Criteria and the three (3) Left-turn Phase Ranked Intersections. PPLT phasing Pilot project is recommended for Metcalf/Mission Ave. Signal modification on new signal projects to be prioritized before decision to proceeding with Pilot.

Action: Motion to approve staff recommendation by Chair McManus, seconded by Commissioner Durney, Commissioner Korbecki opposed motion to approve. Item approved 4 ayes and Korbecki voting No.

2. Audible Pedestrian Signal (APS) Ranking Criteria for Policy:

Ms. Kuukka-Ruotsalainen last presented the prioritization in January 2019. Eight locations have been installed, with three remaining.

Action: Motion to approve staff member recommendation by Commissioner Thornburg, seconded by Commissioner McManus to approve. Motion carried unanimously.

3. Creek Trail Crossing (Rose and Midway):

Ms. Kuukka-Ruotsalainen presented crosswalk treatments for seven Creek Trail Crossings. $1.6M in ATP funding. Pedestrian signal warranted on Midway Drive.

Action: Motion to approve staff member recommendation by Commissioner Durney, seconded by Commissioner Kassebaum. Motion carried unanimously.

School Area Safety:

Central Elementary School, Farr Elementary, Rose, and Oak Hill. Looking to improve and add to future TMPL projects.

COUNCIL ACTION: None.

ORAL COMMUNICATIONS: None

OLD BUSINESS:

1. An overview of various projects involving the City

   a. Traffic Signals in Design: Contract awarded new signal at Valley Parkway/Date El Norte/Fig (25 weeks for poles). Felicita/Escondido signal modification is grant funded.

   b. Traffic Signals: El Norte Bike path signal contract awarded. Under construction: La Terraza Hotel, CCP/Mission, Escondido Blvd/Lincoln, Broadway/Lincoln and Fig/Lincoln signal modification, Encino/17th, East Valley Parkway/Lake Wohlford complete.

TRANSPORTATION COMMISSIONERS:

Korbecki requested information regarding potential future improvements on Bear Valley Parkway/ East Valley Parkway corridor from Valley Center to I-15. Shahzad explained widening of East Valley Parkway to three lanes in each direction, coordinating signal timing on East Valley Parkway. Bear Valley Parkway was coordinated three years ago from East Valley Parkway to the Westfield Mall. Awaiting Caltrans implementation of signal timing at Via Rancho Parkway. County improved a portion of Bear Valley Parkway recently. The section at Las Palmas lies within the County.

Korbecki asked about the Vision Zero program. The City was recently awarded a grant for $72k to evaluate highest priority safety areas. Each year evaluate bicycle and pedestrian accidents. Review every report to see if there are countermeasures, we can install.

Korbecki suggested education prior to implementing PPLT phasing.

Chris Leso, OTS has a media person that works with the Police Department that works with the City of San Diego. Approach to be proactive to reduce accidents. Education on how to reduce accidents.

Thornburg asked about possibly restriping of Via Rancho Parkway to allow the middle or right lanes to feed into the southbound. This area lies within Caltrans right of way.

Thornburg stated a preference of continental style high visibility crosswalks. The City standard is the ladder style.

ADJOURNMENT:

Motion by Commissioner Durney, Seconded Chair McManus to adjourn the meeting at 4:08 p.m. Motion carried unanimously.

Owen Tunnell, Asst. City Engineer

Kim Miller, Minutes Clerk

CITY OF ESCONDIDO

TRANSPORTATION and
COMMUNITY SAFETY COMMISSION

Commission Report of: July 9, 2020 **Item No.: F 1**

Location: **Various locations Citywide**

Initiated By: **City Staff**

Subject: **Review and Discuss Implementation of the 2020/2021 Traffic Signal Priority List (TSPL) and the Left Turn Priority List (LTPL) – Follow-Up from October 2019 and January 2020 meetings.**

Overview: That the Transportation Commission review, discuss, and make recommendations for implementation of the FY20/21 Traffic Signal Priority List (TSPL), and the Left Turn Priority List (LTPL). This list has developed over the past year: At the April 2019 TCSC meeting, the list of signals and locations to be evaluated was reviewed with the Commission. In October 2019, the methodology for evaluation and ranking of these lists was presented and the Transportation Commission voted to recommend the ranking for City Council approval. In January 2020, several intersections were evaluated for a Protected-Permissive Left Turn Phasing pilot.

Based on limited available City funding, and anticipated developer and grant funding becoming available, staff has prepared recommendations for implementation of select intersections in the lists

The Commission's recommendations will be forwarded to the City Council for their consideration and approval.

BACKGROUND – TRAFFIC SIGNAL PRIORITY LIST

Every five or so years the Traffic Engineering staff compiles an updated priority list for potential traffic signal projects. This list is reviewed and evaluated by the Transportation Commission. The recommendations of the Commission are forwarded to the City Council for their consideration and adoption. The priority list is then used to determine which projects will be funded from the current and future capital budgets.

The use of the priority system has proven successful in Escondido for over 30 years. This method of analysis has gathered widespread use and support, because it answers two very basic questions:

(1) Do the traffic conditions at this intersection meet the basic criteria that reflect the benefits and costs of traffic signal control; and if so,
(2) How does each location compare with other candidate locations throughout the City?

The traffic signal priority analysis used Traffic Engineering Policy No. 11, to evaluate potential new signal locations, looking at 8 warrants, including AM and PM Peak volumes, pedestrian volumes, school crossings, signal coordination, crash history and roadway network. Existing signalized intersections were evaluated for whether they met Left Turn Warrants, using the Highway Capacity Manual (HCM 6) methodology. These prioritization methods take into account the relative delays on the intersecting streets, the history of accidents which could be preventable by traffic signals, the occurrence of gaps in the major and minor traffic streams, the volume of pedestrian crossings, and other similar factors. This evaluation method provides a rational and unbiased way of comparing one intersection location with another.

The analysis process results in 2 lists of potential traffic signal projects. Each location on the list can be compared to others for relative need and priority. In this way, the City's limited funds can be allocated to areas of greatest need.

The October 2019 Staff Report discussed in detail how this process worked and how the list was developed. That Staff Report is attached for reference.

This list was further developed for the January 2020 meeting to analyze which intersections could be candidates for a Protected Permissive Left Turn (PPLT) pilot project. The January 2020 Staff Report is also attached for reference.

This assessment evaluated the feasibility of PPLT phasing at each of the three intersections based on criteria such as accident data, roadway conditions and vehicle-pedestrian conflicts. The delay and level of service (LOS) associated with PPLT phasing compared to protected-only left-turn phasing has also been evaluated.

The following Table 1 presents a summary ranking of the Recommended Traffic Signal Intersections, the Recommended Left Turn Phasing Intersections, and the one intersection that was selected for the Protected Permissive Pilot, along with Cost Estimates for each intersection. The cost estimates include construction costs, mobilization and demobilization, and traffic control, design, and environmental cost.

Table 1

	SUMMARY OF COST ESTIMATES		
Rank	**Study Intersection**	**Recommended Improvements**	**Cost Estimate**
Ranking for New Signals			
1	Rock Springs Road / Lincoln Ave	Signalization + 150 LF of sidewalk	$ 454,000
2	Harding Street / Lincoln Ave	Signalization	$ 545,000
3	Lomas Serenas Dr / Via Rancho Pkwy	Signalization	$ 358,000
Ranking for Signal Modifications			

1	Bear Valley Pkwy / Mary Lane	Install left turn phasing on east and west approaches	$ 355,000
2	Metcalf Street / Mission Ave	Install Protected Permissive Left Turn phasing on all approaches (pilot)	$ 500,000
3	Quince Street / Washington Ave	Install left turn phasing on all approaches	$ 450,000
4	Fig Street / East Valley Pkwy	Install left turn phasing on all approaches	$ 498,000
5	Rose Street / Washington Av	Install left turn phasing on east and west approaches	$ 427,000
6	Fig Street / Mission Avenue	Install left turn phasing on all approaches	$ 450,000
7	Centre City Pkwy / Ninth Ave	Install left turn phasing on east and west approaches	$ 440,000
8	Rock Springs Road / Mission Av	Install left turn phasing on north and south approaches	$ 320,000
9	Juniper Street / Felicita Ave	Install left turn phasing on all approaches	$ 445,000
10	Escondido Boulevard /Grand Ave	Install left turn phasing on east and west approaches	$ 350,000
	TOTAL COST ESTIMATE (New Signals & Left Turn Phasing)		**$ 5,592,000**

AVAILABLE FUNDING

Developer and Grant funding: Three of the signalized intersections in the list are expected to benefit from developer and grant funding, allowing those intersections to move forward. These intersections are Rock Springs Road / Lincoln Ave, Rock Springs Road / Mission Ave, as well as Juniper St / Felicita Ave.

Current Revenues: Beyond developer and grant funding opportunities, current revenues available for capital improvements have been severely affected by the COVID-19 pandemic economic impacts. As a result, staff is estimating the following funds available:

Carry-over: $100,000 available for traffic signals and signal modifications. Budget projections for FY20/21 – FY 24/25 are:

- FY 20/21 $50,000 (Note: available funding for FY 20/21 and 21/22 has been impacted from COVID-19 revenue reductions)
- FY 21/22 $50,000
- FY 22/23 $250,000
- FY 23/24 $250,000
- FY 24/25 $250,000

PHASE 1 IMPLEMENTATION

Considering available funds, staff recommends moving forward with the developer and grant funded projects, as well as initiating engineering design on the top two Left Turn Phasing intersections in FY 20/21, as noted in Table 2 below. Note: costs for signal modifications can be similar to new signal installations because many substantial elements may need to be replaced, such as poles and mast arms. As detailed design progresses, these costs may come down significantly if, for example, the existing poles and mast arms can be reused.

Table 2

	SUMMARY OF COST ESTIMATES and FUNDING			
Rank	**Study Intersection**	**Recommended Improvements**	**Cost Estimate**	**Funding**
Signal Priority Ranked List				
1	Rock Springs Road / Lincoln Ave	Signalization + 150 LF of sidewalk	$ 454,000	Developer funded
2	Harding Street / Lincoln Ave	Signalization	$ 545,000	
3	Lomas Serenas Dr / Via Rancho Pkwy	Signalization	$ 358,000	
Left Turn Phase Ranked List				
1	Bear Valley Pkwy / Mary Lane	Install left turn phasing on east and west approaches	$ 355,000	Engineering FY20/21
2	Metcalf Street / Mission Ave	Install Protected Permissive Left Turn phasing on all approaches (pilot)	$ 500,000	Engineering FY20/21
3	Quince Street / Washington Ave	Install left turn phasing on all approaches	$ 450,000	
4	Fig Street / East Valley Pkwy	Install left turn phasing on all approaches	$ 498,000	
5	Rose Street / Washington Av	Install left turn phasing on east and west approaches	$ 427,000	
6	Fig Street / Mission Avenue	Install left turn phasing on all approaches	$ 450,000	
7	Centre City Pkwy / Ninth Ave	Install left turn phasing on east and west approaches	$ 440,000	
8	Rock Springs Road / Mission Av	Install left turn phasing on north and south approaches	$ 320,000	Developer funded
9	Juniper Street / Felicita Ave	Install left turn phasing on all approaches	$ 445,000	Grant funded
10	Escondido Boulevard /Grand Ave	Install left turn phasing on east and west approaches	$ 350,000	

RECOMMENDATIONS: Staff recommends that the Commission review the above Traffic Signal Priority and Left Turn Phasing Priority lists, along with funding availability, and concur with the Phase 1 Implementation proposal, and make a recommendation for approval to City Council.

NECESSARY COUNCIL ACTION:

The Traffic Signal Priority List and Left Turn Phasing Priority List - Phase 1 Implementation, as reviewed and approved by the Transportation Commission recommendations will be presented to the City Council for their consideration and approval.

Prepared by:

Craig Williams
Associate Engineer/Traffic Division

Reviewed by:

Owen Tunnell
Assistant City Engineer

Approved by:

Julie Procopio, PE (Civil)
Director of Engineering Services/City Engineer

ESCONDIDO
City of Choice

CITY OF ESCONDIDO

TRANSPORTATION and
COMMUNITY SAFETY COMMISSION

Commission Report of: January 9th, 2020 **Item No.: F1**

Location: Various locations Citywide

Initiated By: City Council

Subject: Protected/Permitted Left Turn Phasing (PPLT) – Follow-Up from October 2019 meeting of the Left Turn Priority List (LTPL).

OVERVIEW: That the Transportation Commission discuss, analyze and make final recommendations for the evaluation of the top three (3) ranked intersections listed in the Engineering and Traffic Study, dated October 14, 2019, to determine if protected/permissive left-turn (PPLT) phasing is a viable option compared to protected-only left-turn phasing.

BACKGROUND – TRAFFIC SIGNAL PRIORITY LIST and PROTECTED PERMITTED LEFT TURN PHASING.

Every five or so years the Traffic Engineering staff compiles an updated priority list for potential traffic signal projects. This list is reviewed and evaluated by the Transportation Commission. The recommendations of the commission are forwarded to the City Council for their consideration and adoption. The priority list is then used to determine which projects will be funded from the current and future capital budgets.

At the October 2019 TCSC, the priority list of new traffic signals and traffic signal modifications was recommended by the commission.

This report is intended to evaluate the feasibility of Protected-Permissive left turns at the three intersections, listed in Table 1, in the Engineering and Traffic Study.

TABLE 1 – LEFT TURN PHASE RANKED INTERSECTIONS

Rank	Study Intersection	Existing Traffic Control	Recommended Improvement
Left Turn Phase Ranked List			
1	Bear Valley Parkway / Mary Lane	Signalized	Install left turn phasing on east and west approach
2	Metcalf Street / Mission Avenue	Signalized	Install left turn phasing on all approaches
3	Quince Street / Washington Avenue	Signalized	Install left turn phasing on all approaches

As Protected Left Turn Phasing reduces the green time for through movements, to use Permissive Protected Left turn Phasing must be explored first per the CA-MUTCD 2014 Edition Revision 4 dated: March 29, 2019. Figure 4D-11 below.

"4.2.3 Protected-Permissive Left-Turn phasing is defined by the Federal Highway Administration as follows:

A combination of protected and permissive left-turn phasing is referred to as protected-permissive left-turn (PPLT) operation. This phasing pattern is illustrated in Figure 2. A typical signal head and associated signing arrangement that implements protected-permissive phasing is shown below;

Figure 4D-11. Typical Position and Arrangements of Shared Signal Faces for Protected/Permissive Mode Left Turns

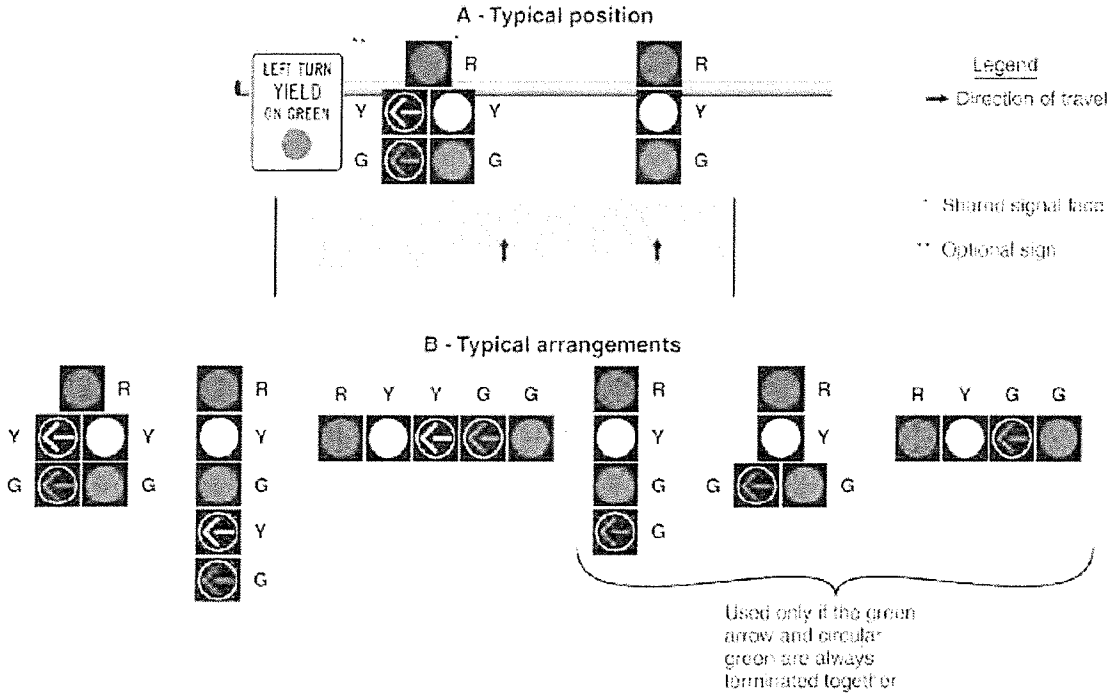
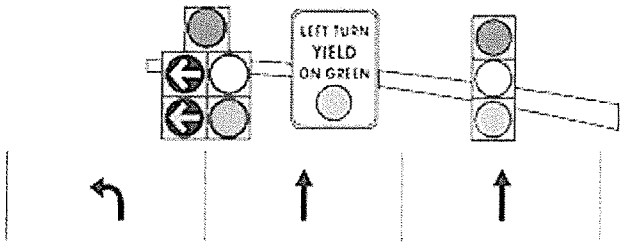
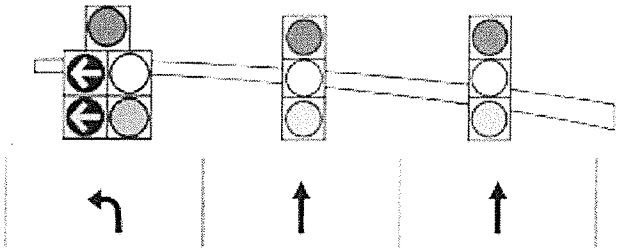


Figure 2. Typical phasing diagram for protected-permissive left-turn phasing.



(a) Protected-permissive left-turn phasing using a five-section head located directly above the lane line that separates the exclusive through and exclusive left-turn lane, along with an accompanying sign.



(b) Protected-permissive left-turn phasing using a five-section signal head located directly above the exclusive left-turn lane.

Possible signal head and signing arrangement for protected-permissive left-turn phasing.

Discussion:

Observed improvements in signal progression and efficiency combined with driver acceptance have led to expanded usage of PPLT over the years. PPLT signals offer numerous advantages when compared to "protected-only" operation. These advantages are associated with both protected-permissive and lead-lag operation. They include the following:

- Average delay per left-turn vehicle is reduced.
- Protected green arrow time is reduced.
- There is potential to omit a protected left-turn phase.
- Arterial progression can be improved, particularly when special signal head treatments are used to allow lead-lag phasing.

Some disadvantages include the following:

- The permissive phase increases the potential for vehicle-vehicle and vehicle-pedestrian conflicts.
- There is a limited ability to use lead-lag phase sequences unless special signal head treatments are used (see below).
- This signal phasing is not widely used and may warrant additional signage and/or education.

The signal head design varies based on the specific phasing used. Shown on page 4 is an example of signal phasing.

This assessment evaluated the feasibility of PPLT phasing at each of the three intersections based on criteria such as accident data, roadway conditions and vehicle-pedestrian conflicts. The delay and level of service (LOS) associated with PPLT phasing compared to protected-only left-turn phasing has also been evaluated. The consultant's report is outlined as follows:

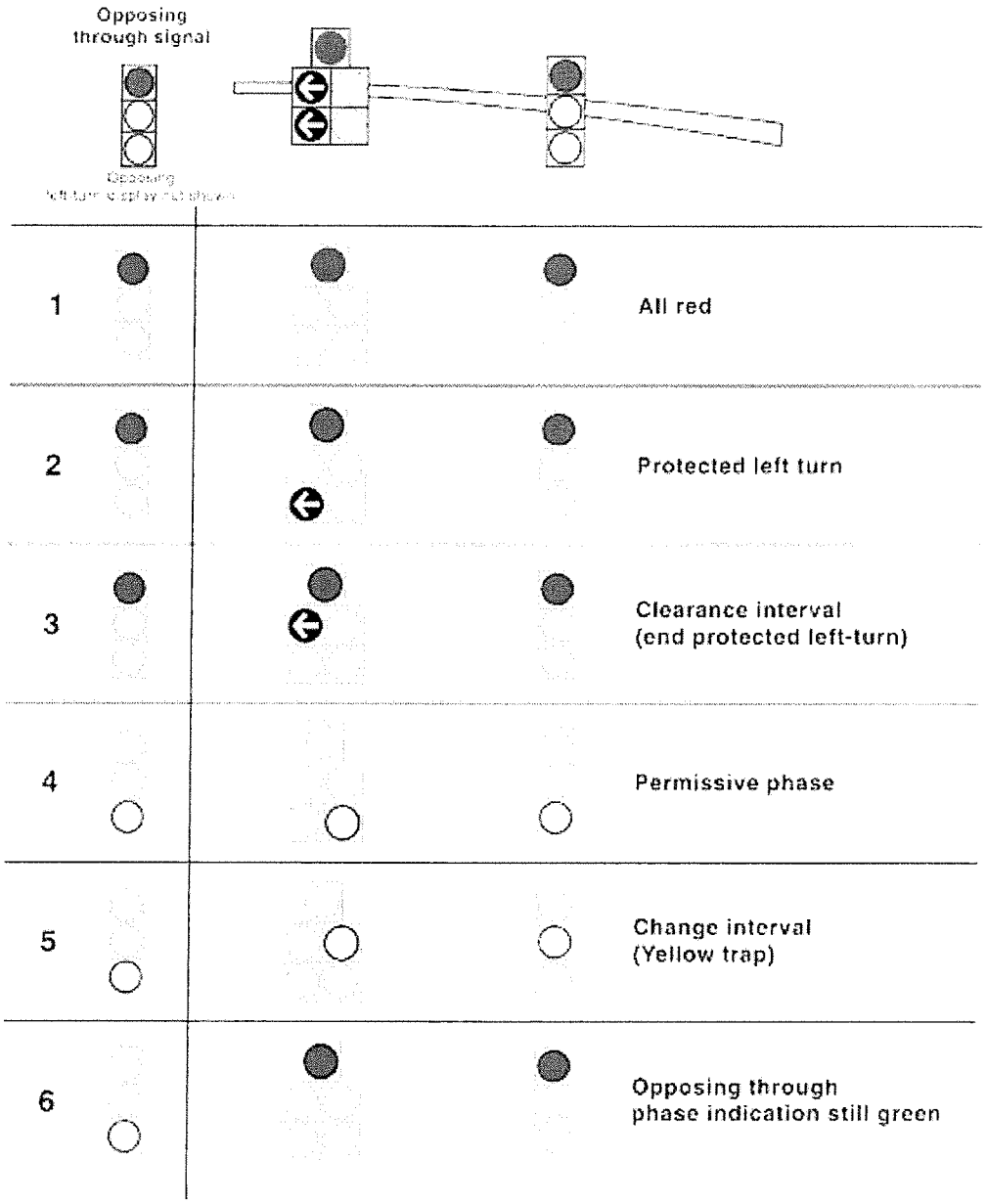
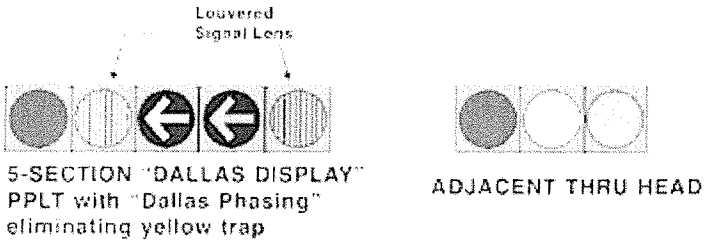


Illustration of the yellow trap.[3]



The protected-permissive left-turn display known as "Dallas display" uses louvers to restrict visibility of the left-turn display to adjacent lanes.[49]

Protected/Permissive Left Turn Phasing Criteria

The Left Turn Phasing Memorandum dated February 6, 1992 prepared by the San Diego Regional Traffic Engineer Council (SANTEC) was used to determine the feasibility of PPLT phasing at the top three (3) ranked intersections listed in Table 1. The SANTEC document suggests that PPLT phasing should be installed prior to a protected-only left-turn phase.. The purpose of this section is to determine if PPLT phasing is appropriate at any of the three (3) locations.

According to SANTEC's Left-Turn Phase – Protected/Permissive Criteria (Section D), a PPLT phase should be considered when the following two conditions are met:

Condition A - Left-turn phase is warranted, and
Condition B - Protected-only left-turn phase criteria are not satisfied.

Condition A is met for the top three (3) ranked intersections for all approaches to the intersections per the Engineering and Traffic Study.

Condition B is based on "Section C" of the SANTEC Left Turn Phasing Memorandum which includes the criteria under which protected-permissive left turn phasing would not be appropriate:

1.) The accident warrant was satisfied, and the protected/permissive operation did not reduce accidents on the approach during the initial six months to 12 months of operation.
THIS CRITERIA DOES NOT APPLY AS THERE IS NO PROTECTED/PERMISSIVE IN EFFECT.

2.) There were four or more accidents involving a left turning vehicle from the approach in a one-year period and the approach has a protected/permissive left-turn phase operation.
THIS CRITERIA APPLIES AND USED IN THIS EVALUATION.

3.) There are two or more left-turn lanes on the approach.
THIS CRITERIA DOES NOT APPLY SINCE ALL 3 INTERSECTIONS ONLY HAVE 1 LEFT-TURN LANE.

4.) Inadequate sight distance caused by curvature in roadway or similar geometric restrictions.
THIS CRITERIA APPLIES AND USED IN THIS EVALUATION.

5.) A leading left-turn movement opposite a lagging left-turn phase operation.
THIS CRITERIA DOES NOT APPLY TO THE TOP 3 INTERSECTIONS SINCE THERE IS CURRENTLY NO LEAD-LAG LEFT TURN PHASE OPERATION.

Only criteria 2 and 4 are applicable to determine if protected-only left-turn phasing is recommended at the top three (3) intersections. Criteria 2 is based on the number of left-turn related accidents in a one-year period and if the approach has PPLT phasing. In this analysis, the PPLT phasing portion of Criteria 2 was not considered since left-turn related accidents are most likely occurring during the "permissive"

portion of the PPLT phase which is no different than what happens under the current permissive phasing. Therefore, the accident data for criteria 2 was evaluated.

This assessment assumes that Condition B is met if 1 of the 5 criteria is satisfied. **Table 2** below summarizes the results of the two criteria relevant at all three locations to determine if Condition B is met.

TABLE 2 – SANTEC PROTECTED ONLY LEFT-TURN PHASE – CONDITION B CRITERIA

Protected Only Left-Turn Phase Criteria (Condition B)	Condition Met? (Yes/No)	Protected Only Left-Turn Phase Criteria Satisfied or Not Satisfied?	Consider PPLT Phasing?
BEAR VALLEY PARKWAY / MARY LANE			
NORTH-SOUTH APPROACH			
Four or more accidents involving a left-turning vehicle from the approach in a one-year period?	No	Not Satisfied	**Yes**
Inadequate sight distance caused by curvature in roadway or similar geometric restrictions?	No		
EAST-WEST APPROACH			
Four or more accidents involving a left-turning vehicle from the approach in a one-year period?	No	Not Satisfied	**Yes**
Inadequate sight distance caused by curvature in roadway or similar geometric restrictions?	No		
METCALF STREET / MISSION AVENUE			
NORTH-SOUTH APPROACH			
Four or more accidents involving a left-turning vehicle from the approach in a one-year period?	No	Not Satisfied	**Yes**
Inadequate sight distance caused by curvature in roadway or similar geometric restrictions?	No		
EAST-WEST APPROACH			
Four or more accidents involving a left-turning vehicle from the approach in a one-year period?	No	Not Satisfied	**Yes**
Inadequate sight distance caused by curvature in roadway or similar geometric restrictions?	No		
QUINCE STREET / WASHINGTON AVENUE			
NORTH-SOUTH APPROACH			
Four or more accidents involving a left-turning vehicle from the approach in a one-year period?	YES	Satisfied	No
Inadequate sight distance caused by curvature in roadway or similar geometric restrictions?	No		
EAST-WEST APPROACH			
Four or more accidents involving a left-turning vehicle from the approach in a one-year period?	YES	Satisfied	No
Inadequate sight distance caused by curvature in roadway or similar geometric restrictions?	No		

Note: SANTEC Left-Turn Phase – Protected-Only Criteria #2 and 4.

As shown in **Table 2**, the intersections of Bear Valley Parkway/Mary Lane and Metcalf Street/Mission Avenue did not satisfy the protected-only left-turn criteria. Therefore, Conditions A & B are met for these two locations. As such, PPLT phasing were considered at both of these locations.

The intersection of Quince Street/Washington Avenue satisfies only Condition A and not Condition B. Therefore, PPLT phasing should not be considered at this location.

Pedestrian and Bicycle Conflicts With Left Turning Vehicles

In addition to evaluating the SANTEC criteria for PPLT phasing, pedestrian and bicycle activity was also evaluated and considered in the final assessment of PPLT phasing at all three locations. The permissive phase increases the potential for vehicle-pedestrian conflicts and vehicle-bicycle conflicts. **Table 3** summarizes the pedestrian and bicycle activity compared to vehicles turning left creating potential conflicts at each location.

TABLE 3 – PEDESTRIAN & BICYCLE ACTIVITY AT RANKED INTERSECTIONS

Study Intersection		Vehicle Left Turn Volumes		Pedestrian Peak Hour Volumes		Bicycle Peak Hour Volumes	
North-South	East-West	North-South	East-West	North-South	East-West	North-South	East-West
Bear Valley Pkwy	Mary Lane	AM = 87 PM = 70	AM = 245 PM = 141	AM = 459 PM = 274	AM = 459 PM = 274	No Data Available	No Data Available
Metcalf Street	Mission Ave	AM = 238 PM = 176	AM = 196 PM = 72	AM = 5 PM = 4	AM = 1 PM = 4	AM = 1 PM = 6	AM = 5 PM = 3
Quince Street	Washington Ave	AM = 135 PM = 157	AM = 100 PM = 81	AM = 26 PM = 17	AM = 15 PM = 32	AM = 1 PM = 6	AM = 12 PM = 11

At Bear Valley Parkway/Mary Lane, there is a high volume of pedestrian traffic, primarily students at San Pasqual High School located on the southeast corner of the intersection. There are 459 total pedestrians in the AM peak hour and 274 total pedestrians in the PM peak hour crossing at this intersection. In the morning, large groups of students (50 to 60) exit the Breeze Rapid bus that stops along the west side of Bear Valley Parkway north of Mary Lane. The students then walk south crossing Mary Lane towards Fire Station #4 and then cross Bear Valley Parkway to enter the school campus. With the high school located adjacent to the intersection, the potential for vehicle-pedestrian conflicts is considered high. Therefore, PPLT phasing at Bear Valley Parkway and Mary Lane is not recommended due to the potential conflicts between vehicles and pedestrians which are primarily high school students.

At Quince Street/Washington Avenue, the potential for vehicle-pedestrian conflicts is high. For example, in the AM peak hour, there are 135 vehicles turning left conflicting with 26 pedestrians. This translates to 1 pedestrian for every 5 vehicles turning left. Due to the high volume of pedestrians and bicyclists at this intersection and Condition B is satisfied, PPLT phasing is not recommended at the intersection of Quince Street/Washington Avenue.

PPLT is recommended is at Metcalf Street/Mission Avenue. Conditions A and B are met based on the SANTEC criteria for determining the feasibility of PPLT phasing. In addition, the vehicle-pedestrian and vehicle-bicycle conflicts at this intersection are considered low (e.g. 1 pedestrian for every 48 vehicles turning left during the AM peak hour).

Protected/Permissive Left Turn Phasing Analysis

PPLT phasing was analyzed in Synchro at Metcalf Street/Mission Avenue. **Table 4** shows the results of the PPLT phasing analysis and compares the PPLT phasing to the protected-only phasing. As shown in the table, the delays increase from the existing condition when adding the protected-only left-turn phase operation.

TABLE 4 – INTERSECTION ANALYSIS COMPARISON

Study Intersection		Existing Conditions		Existing With Adding Protected-Only Left Turn Phasing		Existing With Adding PPLT Phasing	
North-South	East-West	AM	PM	AM	PM	AM	PM
		Delay - LOS	Delay - LOS	Delay - LOS	Delay – LOS	Delay – LOS	Delay - LOS
Metcalf Street	Mission Avenue	31.0 – C	22.3 – C	31.4 – C	34.1 – C	31.1 - C	33.4 - C

As shown in Table 4, the PPLT phasing reduces the overall delay at the intersection compared to the Protected-Only Left-Turn Phasing. During the AM peak hour, the delay is reduced by 0.3 seconds (31.4 – 31.1) and by 0.7 seconds (34.1 – 33.4) in the PM peak hour. While this reduction in delay is not significant, it is expected that the reduction in delay will be greater during off-peak hours when there is less conflicting through traffic.

Pilot Program:

As PPLT is not widely used in Northern San Diego County and this would be the first signal of this type in Escondido, a pilot program is recommended. It is recommended that the PPLT signal be monitored and evaluated for one year following its installation so that the suitability for Escondido can be confirmed.

Conclusion

The top three (3) ranked intersections were evaluated to determine the feasibility of PPLT phasing. Below is a brief summary of each intersection related to the feasibility of PPLT.

Bear Valley Parkway/Mary Lane – Using the SANTEC criteria, PPLT phasing was initially considered since Conditions A and B were met. However, San Pasqual High School is located adjacent to this intersection and the potential for vehicle-pedestrian conflicts is high. **Therefore, PPLT Phasing is not recommended at any approach.**

Metcalf Street/Mission Avenue – Using the SANTEC criteria, PPLT phasing was considered since Conditions A and B were met. The potential vehicle-pedestrian and vehicle-bicycle conflicts at this location are low. **Therefore, PPLT phasing should be considered at all approaches.**
Quince Street/Washington Avenue – Using the SANTEC criteria, PPLT phasing was not considered since Condition A was met, but Condition B was not met. In addition, vehicle-pedestrian and vehicle-bicycle conflicts were relatively high at Quince Street/Washington Avenue. **Therefore, PPLT phasing is not recommended at any approach.**

RECOMMENDATIONS: We recommend that the Commission review the Protected Permissive Left Turn analysis and make a recommendation for approval of PPLT at the intersection of Metcalf and Mission to the City Council as a pilot project to be evaluated for a minimum of one year following installation.

NECESSARY COUNCIL ACTION:

The Traffic Signal Priority List and Left Turn Phasing Priority List, and the PPLT pilot recommendation at the intersection of Metcalf and Mission as reviewed and approved by the Transportation Commission recommendations will be presented to the City Council for their consideration and approval.

Prepared by:

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Attachments: Michael Baker Tech Memo with SANTEC Memo

CITY OF ESCONDIDO

TRANSPORTATION and
COMMUNITY SAFETY COMMISSION

Commission Report of: October 10th, 2019 **Item No.: F 1**

Location: Various locations Citywide

Initiated By: City Staff

Subject: Review and Discuss the 2019/2020 Traffic Signal Priority List (TSPL) and the Left Turn Priority List (LTPL) – Follow-Up from April 2019 meeting.

Overview: That the Transportation Commission discuss, analyze and make final recommendations for the formation of the Traffic Signal Priority List (TSPL), and the Left Turn Priority List (LTPL). At the April 11th, 2019 TCSC meeting the list of signals and locations to be evaluated was reviewed with the commission.

Staff has prepared a recommendation for the top three (3) locations for a new signal and top ten (10) locations for the addition of protected left turns in this report.

The Commission's recommendations will be forwarded to the City Council for their consideration and approval.

BACKGROUND – TRAFFIC SIGNAL PRIORITY LIST

Every five or so years the Traffic Engineering staff compiles an updated priority list for potential traffic signal projects. This list is reviewed and evaluated by the Transportation Commission. The recommendations of the commission are forwarded to the City Council for their consideration and adoption. The priority list is then used to determine which projects will be funded from the current and future capital budgets.

The use of the priority system has proven successful in Escondido for over 30 years. This method of analysis has gathered widespread use and support, because it answers two very basic questions:

(1) Do the traffic conditions at this intersection meet the basic criteria that reflect the benefits and costs of traffic signal control; and if so,

(2) How does each location compare with other candidate locations throughout the City?

The traffic signal priority analysis uses Traffic Engineering Policy No. 11, to evaluate locations of proposed new signals.

This procedure takes into account the relative delays on the intersecting streets, the history of accidents which could be preventable by traffic signals, the occurrence of gaps in the major and minor traffic streams, the volume of pedestrian crossings, and other similar factors. This evaluation method provides a rational and unbiased way of comparing one intersection location with another.

The analysis process results in a list of potential traffic signal projects. Each location on the list can be compared to others for relative need and priority. In this way, the City's limited funds can be allocated to areas of greatest need.

TABLE 9 – CRITERIA RANKING SUMMARY

Criteria	Description	Maximum Priority Points	Relative Weight	Criteria Summary
1	Total Vehicular Volume	15	16%	Considers total entering volume from the major street and minor street for a four-hour period (2:00 to 6:00 PM).
2	Interruption of Continuous Traffic	10	11%	Considers total entering volume on the side street in a four-hour period (2:00 to 6:00 PM).
3	Pedestrian Volume	10	11%	Considers number of pedestrians crossing major street in a four-hour period (2:00 to 6:00 PM).
4	School Area Traffic Signal	10	11%	Considers the number of school aged children crossing the major street relative to the volume on the major street.
5	Progressive Movement or Signal Systems	5	5%	Considers whether the installation of a signal is critical relative to the overall signal system and progression on a coordinated system.
6	Accident History	15	16%	Considers accidents correctable by a traffic signal over a 12-month period.
7	Four Hour Volumes	6	7%	Based on CA MUTCD Warrant #2.
8	Peak Hour Delay	N/A	N/A	This criterion was not considered in this study since Criterion 9 is very similar.
9	Peak Hour Volume	6	7%	Based on CA MUTCD Warrant #3.
10	Special Conditions	15	16%	To be determined on a case by case basis. Proximity to schools and ADA compliance were considered in this study.
TOTAL		**92**	**100%**	

The priority evaluation and citywide ranking includes 6 locations. The list is a result of a prescreening process, using the 2014 TSPL as a base point. Preliminary safety and volume data were reviewed for unsignalized locations and for the candidate locations remaining on the 2014 list. All remaining locations from the 2014 TSPL were included and three new intersections were added for evaluation. The higher-ranking intersections were analyzed further to produce the proposed 2019 list.

Locations evaluated for a new Traffic Signal

1 - Rock Springs Road / Lincoln Avenue
2 - Harding Street / Lincoln Avenue
3 - Lomas Serenas Drive / Via Rancho Parkway
4 - South Broadway / 5th Avenue
5 - Sierra Linda Drive / San Pasqual Road
6 - Rose Street / Oak Hill Drive

The following Table 5 from the consultant's report provide the ranking and prioritization for Traffic Signal Priority List (TSPL) and Table 7 for the Left Turn Priority List (LTPL).

TABLE 5 – SUMMARY OF TRAFFIC SIGNAL WARRANT ANALYSIS

	Study Intersection	Was the Signal Warrant Met?									
		Warrant 1	Warrant 2	Warrant 3	Warrant 4	Warrant 5	Warrant 6	Warrant 7		Warrant 8	Traffic Signal Recommended?
		8-Hour Volume	4-Hour Volume	Peak Hour	Pedestrian Volume	School Crossing	Coord. Signal	# [1]	Crash Exp.	Roadway Network	
1	Rock Springs Road / Lincoln Avenue	YES	YES	YES	NO	NO	NO	5	YES	YES	YES
2	Harding Street / Lincoln Avenue	YES	YES	YES	NO	NO	NO	2	NO	YES	YES
3	Lomas Serenas Drive / Via Rancho Parkway	YES	YES	YES	NO	NO	NO	0	NO	NO	YES
4	South Broadway / 5th Avenue	NO	NO	NO	NO	NO	NO	0	NO	NO	NO
5	Sierra Linda Drive / San Pasqual Road	NO	NO	NO	NO	NO	NO	3	NO	NO	NO
6	Rose Street / Oak Hill Drive	NO	NO	NO	NO	NO	NO	2	NO	NO	NO

Note: Signal Warrants were evaluated using Synchro 10 Warrant software.
[1] Represents the highest number of crashes reported within a 12-month period between 1/1/2017 and 1/1/2019 based on the City's Collision Summary Report, refer to Appendix C. Warrant #7 is met when 5 or more crashes occur within a 12-month period involving personal injury or property damage and if vehicle and pedestrian volume thresholds are met per the CA MUTCD.

The below table 13 from the report summarizes the results of the traffic signal ranking analysis. As shown, the intersections are listed in order of highest to lowest total points based on Criterion 1 through 10. Because locations four (4) through six (6) did not met any warrants, they were not ranked.

TABLE 13 – TRAFFIC SIGNAL RANKING

Study Intersection	Criteria 1: Total Volume	Criteria 2: Interruption of Continuous Flow	Criteria 3: Pedestrian Volume	Criteria 4: School Area	Criteria 5: Signal System Warrant (Warrant 1)	Criteria 6: Accident History	Criteria 7: Four Hour Volume (Warrant 2)	Criteria 8: Peak Hour Volume (Warrant 3)	Criteria 10: Special Circumstances		Total Points (Max 92)
									School Proximity	ADA Compliant	
(Maximum Points per Criteria)	Points (15)	Points (10)	Points (10)	Points (10)	Points (5)	Points (15)	Points (6)	Points (6)	Points (5)	Points (10)	
1 - Rock Springs Road / Lincoln Avenue	15	5	0	0	0	1	5	2	0	10	**39**
2 - Harding Street / Lincoln Avenue	4	4	0	0	0	0	2	0	5	10	**25**
3 - Lomas Serenas Drive / Via Rancho Parkway	5	4	5	0	0	0	0	0	0	10	**25**

Note: Ranking of study intersections 2 & 3 was based on the number of accidents reported at each location since both locations have 25 points. Harding Street / Lincoln Avenue has three accidents reported and Lomas Serenas Drive / Via Rancho Parkway has no accidents reported. Refer to Appendix C for collision reports. The level of service improvement for Harding Street / Lincoln Avenue (LOS F to LOS A) is greater than that for Lomas Serenas Drive / Via Rancho Parkway (LOS C/B to LOS B/A).

Locations evaluated for Traffic Signal Modifications for Left Turn Phasing

The Traffic signal modification list was selected from the compilation of the police reports of the Top 10 accident locations, school district request, and internal assessment.

The list below provides the locations analyzed for Traffic Signal Modification Priority List which includes 15 intersections.

Intersection ID #:

7 - Fig Street / Mission Avenue
8 - Quince Street / Washington Avenue
9 - Rose Street / Washington Avenue
10 - Metcalf Street / Mission Avenue
11 - Fig Street / East Valley Parkway
12 - Juniper Street / Felicita Avenue
13 - Escondido Boulevard / Fifth Avenue
14 - Centre City Parkway / Fifth Avenue
15 - Centre City Parkway / Ninth Avenue
16 - Centre City Parkway / Thirteenth Avenue
17 - Ash Street / Lincoln Avenue
18 - Escondido Boulevard / Grand Avenue
19 - Rock Springs Road / Mission Avenue
20 - Escondido Boulevard / Ninth Avenue
21 - Bear Valley Parkway / Mary Lane

Left Turn Warrants:

Left Turn Warrants were evaluated at fifteen (15) study intersections for left turn phasing using the HCM 6 analysis methodology. All of the study intersections met the minimum criteria for left turn phasing. **Table 14** from the report summarizes the left turn phasing recommendations. The percentage of warrants met at the intersection was based on whether left turn warrants were met in both the AM and PM peak period and whether the warrants were met in both directions of travel (northbound and southbound or eastbound and westbound). One point was assigned for each peak period and each direction for a maximum of eight (8) points per intersections for intersections with no existing left turn phasing and four (4) points per intersection with existing left turn phasing on at least one approach.

Recommendations for the Left Turn Warrants per the HCM 6 analysis methodology meeting the minimum criteria for left turn phasing. Summarized in **Table 7** for left turn phasing.

TABLE 7 – SUMMARY OF LEFT TURN PHASING RECOMMENDATIONS

Study Intersection	Existing North-South Left Turn Treatments	Existing East-West Left Turn Treatments	Recommendation
7 - Fig Street / Mission Avenue	Permitted	Permitted	Install left turn phasing on all approaches.
8 - Quince Street / Washington Avenue	Permitted	Permitted	Install left turn phasing on all approaches.
9 - Rose Street / Washington Avenue	Permitted	Permitted	Install left turn phasing on east and west approach only.
10 - Metcalf Street / Mission Avenue	Permitted	Permitted	Install left turn phasing on all approaches.
11 - Fig Street / East Valley Parkway	Permitted	Permitted	Install left turn phasing on all approaches.
12 - Juniper Street / Felicita Avenue	Permitted	Permitted[1]	Install left turn phasing on all approaches.
13 - Escondido Boulevard / Fifth Avenue	Permitted	Permitted	Install left turn phasing on north and south approach only.
14 - Centre City Parkway / Fifth Avenue	Protected	Permitted	Install left turn phasing on east and west approach.
15 - Centre City Parkway / Ninth Avenue	Protected	Permitted	Install left turn phasing on east and west approach.
16 - Centre City Parkway / Thirteenth Avenue	Protected	Permitted	Install left turn phasing on east and west approach.
17 - Ash Street / Lincoln Avenue	Split Phase	Permitted	Install left turn phasing on east and west approach.
18 - Escondido Boulevard / Grand Avenue	Permitted	Permitted	Install left turn phasing on east and west approach only.
19 - Rock Springs Road / Mission Avenue	Permitted	Protected	Install left turn phasing on north and south approach.
20 - Escondido Boulevard / Ninth Avenue	Protected	Permitted	Install left turn phasing on east and west approach.
21 - Bear Valley Parkway / Mary Lane	Protected	Permitted	Install left turn phasing on east and west approach.

[1] Protected Left Turn Phasing is currently provided at the eastbound approach of Felicita Avenue.

Table 8 summarizes the resulting levels of service with the recommended left turn phase modifications.

TABLE 8 – LEVEL OF SERVICE SUMMARY WITHOUT AND WITH LEFT TURN PHASING RECOMMENDATIONS

Int. ID - Study Intersection	Existing Conditions				Existing with Added Left Turn Phasing			
	AM		PM		AM		PM	
	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
7 - Fig Street / Mission Avenue	16.1	B	13.4	B	34.6	C	29.5	C
8 - Quince Street / Washington Avenue	16.9	B	20.0	B	26.3	C	30.2	C
9 - Rose Street / Washington Avenue	10.2	B	10.9	B	15.6	B	17.2	B
10 - Metcalf Street / Mission Avenue	31.0	C	22.3	C	31.4	C	34.1	C
11 - Fig Street / East Valley Parkway	19.1	B	24.1	C	33.6	C	34.7	C
12 - Juniper Street / Felicita Avenue	**35.3**	**D**	17.2	B	**37.1**	**D**	30.4	C
13 - Escondido Boulevard / Fifth Avenue	8.0	A	8.4	A	12.9	B	12.7	B
14 - Centre City Parkway / Fifth Avenue	35.2	D	35.2	D	46.4	D	46.8	D
15 - Centre City Parkway / Ninth Avenue	25.8	C	**40.1**	**D**	32.4	C	**41.1**	**D**
16 - Centre City Parkway / Thirteenth Avenue	30.0	C	**38.2**	**D**	34.0	C	**40.1**	**D**
17 - Ash Street / Lincoln Avenue	**61.4**	**E**	**41.1**	**D**	**76.2**	**E**	**50.0**	**D**
18 - Escondido Boulevard / Grand Avenue	19.3	B	23.2	C	23.8	C	29.5	C
19 - Rock Springs Road / Mission Avenue	33.6	C	26.0	C	33.8	C	33.7	C
20 - Escondido Boulevard / Ninth Avenue	17.9	B	22.5	C	25.0	C	32.0	C
21 - Bear Valley Parkway / Mary Lane	26.6	C	**36.6**	**D**	32.3	C	**36.8**	**D**

Note: Deficient intersection operation indicated in **bold**.
[1] Average seconds of delay per vehicle.
LOS = level of service.

The trade off in installing left turn phasing is the Level of Service of the intersection drops..

The intersection of Ash Street at Lincoln Avenue is expected to increase the delay in the AM peak hour from 61.4 seconds (LOS E) without left turn phasing to 76.2 seconds (LOS E) with left turn phasing. This translates to an increase in 14.6 seconds of delay when left turn phasing is implemented at this location. Based on crash data over the last five year (January 2014 to January 2019), only 3 out of 28 crashes are related to motorists making left turns at Ash Street/Lincoln Avenue. Therefore, the decrease in level of service in adding a left turn phase versus the frequency of left turn related crashes does not warrant the installation of a left turn phase at Ash Street/Lincoln Boulevard. In addition, widening of Lincoln Avenue is planned in the City's General Plan Circulation Element to a Collector east of Ash Street and Prime Arterial west of Ash Street which would improve the level of service at this intersection.

Therefore, left turn phasing is <u>not recommended at Ash Street/Lincoln Avenue</u> and was not included in the ranking system, due to the intersection not meeting warrants, Level of Service operation beyond acceptable levels, causing higher delay and possibly future widening.

TABLE 14 – LEFT TURN WARRANT SUMMARY

Int. ID	Study Intersection		Existing Left Turn Treatment		Left Turn Phasing Recommendation	Met Warrant in AM?					Met Warrant in PM?					Total AM & PM Points	Max Available Points[1]	% of Warrants Met[2]
	(North/South)	(East/West)	N-S	E-W		North	South	East	West	AM Points	North	South	East	West	PM Points			
7	Fig Street	Mission Avenue	Perm.	Perm.	Install LT phasing on all approaches	No	Yes	Yes	No	2	No	Yes	Yes	Yes	3	5	8	63%
8	Quince Street	Washington Avenue	Perm.	Perm.	Install LT phasing on all approaches	Yes	No	Yes	Yes	3	Yes	No	No	Yes	2	5	8	63%
9	Rose Street	Washington Avenue	Perm.	Perm.	Install east-west left turn phasing	N/A[4]	N/A[4]	No	Yes	1	N/A[4]	N/A[4]	No	No	0	1	4	25%
10	Metcalf Street	Mission Avenue	Perm.	Perm.	Install LT phasing on all approaches	Yes	No	Yes	Yes	3	Yes	No	No	Yes	2	5	8	63%
11	Fig Street	East Valley Parkway	Perm.	Perm.	Install LT phasing on all approaches	No	No	Yes	No	1	Yes	Yes	Yes	Yes	4	5	8	63%
12	Juniper Street	Felicita Avenue	Perm.	Perm.[3]	Install LT phasing on all approaches	Yes	No	CP	No	1	No	No	Yes	No	1	2	7	29%
13	Escondido Boulevard	Fifth Avenue	Perm.	Perm.	Install north-south left turn phasing	Yes	No	N/A[4]	N/A[4]	1	No	No	N/A[4]	N/A[4]	0	1	4	25%
14	Centre City Parkway	Fifth Avenue	Prot.	Perm.	Install east-west left turn phasing	CP	CP	No	Yes	1	CP	CP	No	Yes	1	2	4	50%
15	Centre City Parkway	Ninth Avenue	Prot.	Perm.	Install east-west left turn phasing	CP	CP	No	No	0	CP	CP	No	Yes	1	1	4	25%
16	Centre City Parkway	Thirteenth Avenue	Prot.	Perm.	Install east-west left turn phasing	CP	CP	No	No	0	CP	CP	Yes	No	1	1	4	25%
17	Ash Street	Lincoln Boulevard	Split Phase	Perm.	Install east-west left turn phasing	Split	Split	No	No	0	Split	Split	No	Yes	1	1	4	25%
18	Escondido Boulevard	Grand Avenue	Perm.	Perm.	Install east-west left turn phasing	N/A[4]	N/A[4]	No	No	0	N/A[4]	N/A[4]	Yes	No	1	1	4	25%
19	Rock Springs Road	Mission Avenue	Perm.	Prot.	Install north-south left turn phasing	No	Yes	CP	CP	1	No	Yes	CP	CP	1	2	4	50%
20	Escondido Boulevard	Ninth Avenue	Prot.	Perm.	Install east-west left turn phasing	CP	CP	No	No	0	CP	CP	Yes	No	1	1	4	25%
21	Bear Valley Parkway	Mary Lane	Prot.	Perm.	Install east-west left turn phasing	CP	CP	No	Yes	1	CP	CP	No	Yes	1	2	4	50%

CP = Left Turn Phasing Currently Provided. N/A = Not Applicable

[1] A maximum of four points are assigned to intersections where both north-south and east-west left turn phasing are recommended. A maximum of four points are assigned to intersections where only one north-south or east-west left turn phasing is recommended.

[2] Percentage of Warrants Met = Total AM & PM points / Max Available Points multiplied by 100%.

[3] Protected left turn phasing currently provided in the eastbound approach of Felicita Avenue.

[4] Left turn phasing is not recommended at these approaches and therefore a maximum of four points are assigned to these intersections.

TABLE 15 – LEFT TURN PHASE RANKING

Int. ID	Study Intersection (North/South)	Study Intersection (East/West)	Existing Left Turn Treatment N-S	Existing Left Turn Treatment E-W	Left Turn Phasing Recommendation	Left Turn & Opposing Through Volume (Critical Peak 1-hour) AM Left Turn	AM Opp. Thru	PM Left Turn	PM Opp. Thru	Total	Volume Score[1]	Left Turn Related Crashes	Left Turn Crash Rate[2]	Crash Score[3]	85% Speed (MPH)	Speed Score[4]	Weighted Average Score[5]	Overall Rank
21	Beerwalley Parkway	Merry Lane	Prot.	Perm.	Install east-west left turn phasing	26	1253	44	1229	2,552	14	1	0.014	5	45	14	11.8	1
10	Metcalf Street	Mission Avenue	Perm.	Perm.	Install LT phasing on all approaches	10	855	44	971	1,880	12	3	0.054	11	40	12	11.8	2
8	Quince Street	Washington Avenue	Perm.	Perm.	Install LT phasing on all approaches	11	753	54	771	1,636	11	11	0.159	14	38	11	11.8	3
11	Fig Street	Eastwalley Parkway	Perm.	Perm.	Install LT phasing on all approaches	36	1175	59	825	2,095	12	5	0.053	10	33	8	11.0	4
9	Rose Street	Washington Avenue	Perm.	Perm.	Install east-west left turn phasing	22	671	59	615	1,330	9	7	0.036	13	41	13	11.0	5
7	Fig Street	Mission Avenue	Perm.	Perm.	Install LT phasing on all approaches	55	561	35	650	1,329	10	2	0.017	6	40	12	9.5	6
15	Centre City Parkway	North Avenue	Prot.	Perm.	Install east-west left turn phasing	22	455	27	540	1,075	7	2	0.041	9	40	12	8.8	7
19	Rock Springs Road	Mission Avenue	Perm.	Prot.	Install north-south left turn phasing	54	404	100	454	1,052	6	3	0.019	5	41	13	8.3	8
12	Lincoln Street	Felicita Avenue	Perm.	Perm.[6]	Install LT phasing on all approaches	75	385	9	639	1,109	5	1	0.012	4	40	12	8.0	9
18	Escondido Boulevard	Grand Avenue	Perm.	Perm.	Install east-west left turn phasing	43	254	58	435	790	4	7	0.093	12	40	12	8.0	10
13	Escondido Boulevard	Fifth Avenue	Perm.	Perm.	Install north-south left turn phasing	56	251	35	500	842	5	2	0.015	7	37	10	6.8	11
20	Escondido Boulevard	North Avenue	Prot.	Perm.	Install east-west left turn phasing	71	382	112	236	801	3	2	0.011	3	34	9	4.5	12
16	Centre City Parkway	Thirteenth Avenue	Prot.	Perm.	Install east-west left turn phasing	54	155	57	227	493	2	1	0.009	2	32	7	3.3	13
14	Centre City Parkway	Fifth Avenue	Prot.	Perm.	Install east-west left turn phasing	37	102	39	166	445	1	1	0.006	1	37	10	3.3	14

[1] Protected Left Turn Phasing Considered in Protection. [2] N/A = Not Applicable

[3] Volume Score was based on the sum of AM and PM left turns and opposing through volume ranked from the highest volume (14 points) to the lowest volume (1 point).

[4] Left Turn Crash Rate = Total left turn related crashes / (2 * (AM & PM Peak Hour left turn volume))

[5] Crash Score was based on the crash rate from most great crash rate (14 points) to lowest crash rate (1 point).

[6] Speed Score was based on the highest speed (14 points) to lowest speed (1 point).

[7] Overall Rank was based on the Weighted Average Score = 30% * Volume Score + 20% * Crash Score + 20% * Speed Score. For Weighted Average Scores that were tied, the intersection with the highest volume was ranked higher than the Crash Score Rank.

[8] Protected left turn phase has a dedicated lane, but the outbound lane is shared with through traffic.

Left Turn Phase Ranking:

Ranking for the left turn phase is based on three criteria: volumes, crashes and speeds.

> **Criteria 1 (Volumes)** was based on the sum of the critical left turn and opposing through volumes during the AM and PM peak hour for each intersection. For study intersections with permitted phasing on all approaches, the highest left turn and opposing through volume during the AM and PM peak hour was selected. Left turn and opposing through volumes with left turn phasing that is currently protected were not considered in this criterion.
> **Criteria 2 (Crashes)** was based on left turn crash rate which is equal to the left turn related crashes (January 2014 to January 2019) divided by the critical AM and PM peak hour left turn volume at the study intersection.
> **Criteria 3 (Speeds)** was based on the highest 85th percentile speed recorded for each approach of the intersection.

The results of the left turn ranking are summarized in **Table 15**. To calculate the weighted average score for each intersection, a weight of 50% was assigned to the volumes, 25% to the crashes, and 25% to the speeds for a total of 100%. As shown, the intersections are listed in order from the highest weighted average score (11.8) to the lowest weighted average score (3.3). Bear Valley Parkway/Mary Lane, Metcalf Street/Mission Avenue, and Quince Street/Washington Avenue have the same weighted average score of 11.8. For ranking purposes, volumes were used to rank intersections with the same weighted average score, so that the protected left turns were prioritized where they would benefit the highest number of drivers.

SIGNAL MODIFICATION PROJECTS

The proposed ranking of traffic signal modification locations **Table 15** is presented to you for analysis. Additional detail is included in the separate consultant report, attached for reference.

Your recommendation to the Council for adopting a list does not necessarily commit the city to installing the traffic signals in the order they appear on the list. Three examples will illustrate this principle:

1. When preliminary engineering is conducted for one of the locations, it may be found that additional right-of-way is necessary to provide acceptable lane geometry to allow signalization. Instead of placing all other signal projects on hold while right-of-way or other concerns are satisfied, following intersections on the list may be funded and designed in the interim. The higher priority intersection would be funded and designed when the other complicating factors are resolved.
2. There may be property adjacent to the intersection that is proposed for development, which might mean that ultimate street improvements would be installed in the future. The intersection may function more efficiently and be signalized with less cost, if the signal installation is deferred until the frontage improvements are completed.
3. A traffic signal could be installed as a condition of a development project or a large street or intersection improvement project, or through grant funding.

Table 16 shows the recommended ranking along with a summary of the cost estimates for each ranked location. The cost estimates include construction costs, mobilization and demobilization, and traffic control, design, and environmental cost.

TABLE 16 – SUMMARY OF COST ESTIMATES

Rank	Study Intersection	Recommended Improvement	Cost Estimate
Signal Priority Ranked List			
1	Rock Springs Road / Lincoln Avenue	Signalization & 150 feet of sidewalk	$454,000
2	Harding Street / Lincoln Avenue	Signalization	$545,000
3	Lomas Serenas Drive / Via Rancho Parkway	Signalization	$358,000
Left Turn Phase Ranked List			
1	Bear Valley Parkway / Mary Lane	Install left turn phasing on east and west approach	$355,000
2	Metcalf Street / Mission Avenue	Install left turn phasing on all approaches	$473,000
3	Quince Street / Washington Avenue	Install left turn phasing on all approaches	$450,000
4	Fig Street / East Valley Parkway	Install left turn phasing on all approaches	$498,000
5	Rose Street / Washington Avenue	Install left turn phasing on east and west approaches	$427,000
6	Fig Street / Mission Avenue	Install left turn phasing on all approaches	$450,000
7	Centre City Parkway / Ninth Avenue	Install left turn phasing on east and west approaches	$440,000
8	Rock Springs Road / Mission Avenue	Install left turn phasing on north and south approaches	$320,000
9	Juniper Street / Felicita Avenue	Install left turn phasing on all approaches	$445,000
10	Escondido Boulevard / Grand Avenue	Install left turn phasing on east and west approaches	$350,000
TOTAL COST ESTIMATE (New Signals & Left Turn Phasing)			**$5,565,000**

RECOMMENDATIONS: We recommend that the Commission review the above ranked Traffic Signal Priority List and Left Turn Phasing Priority list as prepared by the consultant and make a recommendation for approval to City Council.

NECESSARY COUNCIL ACTION:

The Traffic Signal Priority List and Left Turn Phasing Priority List as reviewed and approved by the Transportation Commission recommendations will be presented to the City Council for their consideration and approval.

Respectfully submitted,

Prepared by:

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Associate Engineer/ Traffic Division

Reviewed by:

Owen Tunnell, PE (Civil)
Assistant City Engineer

Approved by:

Julie Procopio, PE (Civil)
Director of Engineering Services

CITY OF ESCONDIDO

TRANSPORTATION and
COMMUNITY SAFETY COMMISSION

Commission Report of: July 9th, 2020 **Item No.: F2**

Location: Citywide

Initiated By: Staff

Request: Review and approve The 2020/21 Traffic Management Project List (TMPL)

Background:

Transportation and Community Safety Commission (TCSC) approved a policy to evaluate and prioritize proposed projects using a Traffic Management Project List (TMPL) on January 9, 2014. As stated in the policy, a list of projects needs to be evaluated by staff and presented to TCSC for consideration each year. The TCSC will provide direction to staff as to which projects should be selected for funding.

The following scoring criteria has been approved by TCSC to be used to evaluate and prioritize projects on the TMPL:

- Road Condition (max. 6 points)
  - Geometric Design (max. 3 points)

    Not Standard= 3, Substandard= 2, Partially Substandard= 1
  - Roadside Improvement (max. 3 points)

    Unimproved= 3, Partially Unimproved= 2, Mostly Improved with Gaps in Improvement= 1
- Road Usage (max. 6 points)
  - Bike and Pedestrian Volume (max. 3 points)

    High= 3, Medium= 2, Low= 1
  - Average Daily Traffic (ADT) (max. 3 points)

    ADT>7400veh/day= 3, 7400≥ADT>5400veh/day= 2, 5400≥ADT>3400veh/day= 1
- Anticipated Effectiveness (max. 6 points)
  - Feasibility of the Solution (max. 3 points)

    High=3, Medium=2, Low=1
  - Effectiveness of the Solution (max. 3 points)

    High=3, Medium=2, Low=1
- Problem Severity×2 (max. 12 points)
  - Frequency of Accidents (max. 6 points)

    Accident Rate≥1.5= 6, 1.5>Accident Rate≥0.5= 4, 0.5>Accident Rate= 2

- Speeding Problem (max. 6 points)

  (85% - Design Speed) ≥10mph= 6, 10mph>(85% - Design Speed) ≥5mph=4, (85% - Design Speed)< 5mph= 2

Projects could receive a maximum of 30 points based on their different characteristics, projects nature and location. The projects with the higher total accumulated points have a higher priority on TMPL.

Discussion & Purpose:

2020/21 Traffic Management Project List (TMPL) includes five different projects citywide. The list of projects with a brief description of the traffic concerns together with the potential solution are provided in this report.

2020/21 TMPL

1. **Crosswalk Improvements at Maple Street and 4th Avenue (Central Elementary School) (estimated cost: $25,000)**

   City staff coordinated with the Escondido Union School District (EUSD) to prioritize the existing uncontrolled mid-block crosswalks in school zones. Crosswalk improvements at the intersection of Maple Street and 4th Avenue at the frontage of the Central Elementary School have been recommended on this year's TMPL due to the high volume of students utilizing the crosswalks.

   Central Elementary School, with a student population of approximately 600, is located at 122 W 4th Avenue. The intersection of Maple Street and 4th Avenue is a three-legged intersection with stop control on 4th Avenue. Yellow crosswalks (two parallel stripes type) were installed at all three legs of the intersection. The two crosswalks on Maple Street are uncontrolled. School staff assist students crossing the southern crosswalk on Maple Street during school pick-up and drop-off. Figure 1 depicts the location of the existing crosswalks at the intersection of Maple Street and 4th Avenue and Figure 2 shows the existing crosswalks on Maple Street at 4th Avenue.

   EUSD, City staff, and COMPACT, who provides crossing guard services to the District, had a meeting with the principal of Central Elementary School in September 2019 to discuss concerns regarding Maple Street/4th Avenue crosswalks. These concerns included perceived speeding on Maple Street, cars not yielding to students crossing the street, and parents double-parking along Maple Street during pick-up and drop-off blocking traffic flow and visibility of crosswalks. The Escondido Police Department has assigned police officers to be present in the area occasionally.

   Pedestrian counts provided by COMPACT reflect that 30 to 50 students cross Maple Street on the north side of the intersection, and 40 to 60 students cross Maple Street on the south side during school pick-up and drop-off.

   Maple Street is a two-lane roadway without two-way-left-turn lane. On-street parking is allowed. Concrete sidewalk is provided on both sides of the roadway. The average daily traffic on Maple Street between 3rd Avenue and 5th Avenue is 1,000 vehicles per day and the speed limit is 25 MPH.

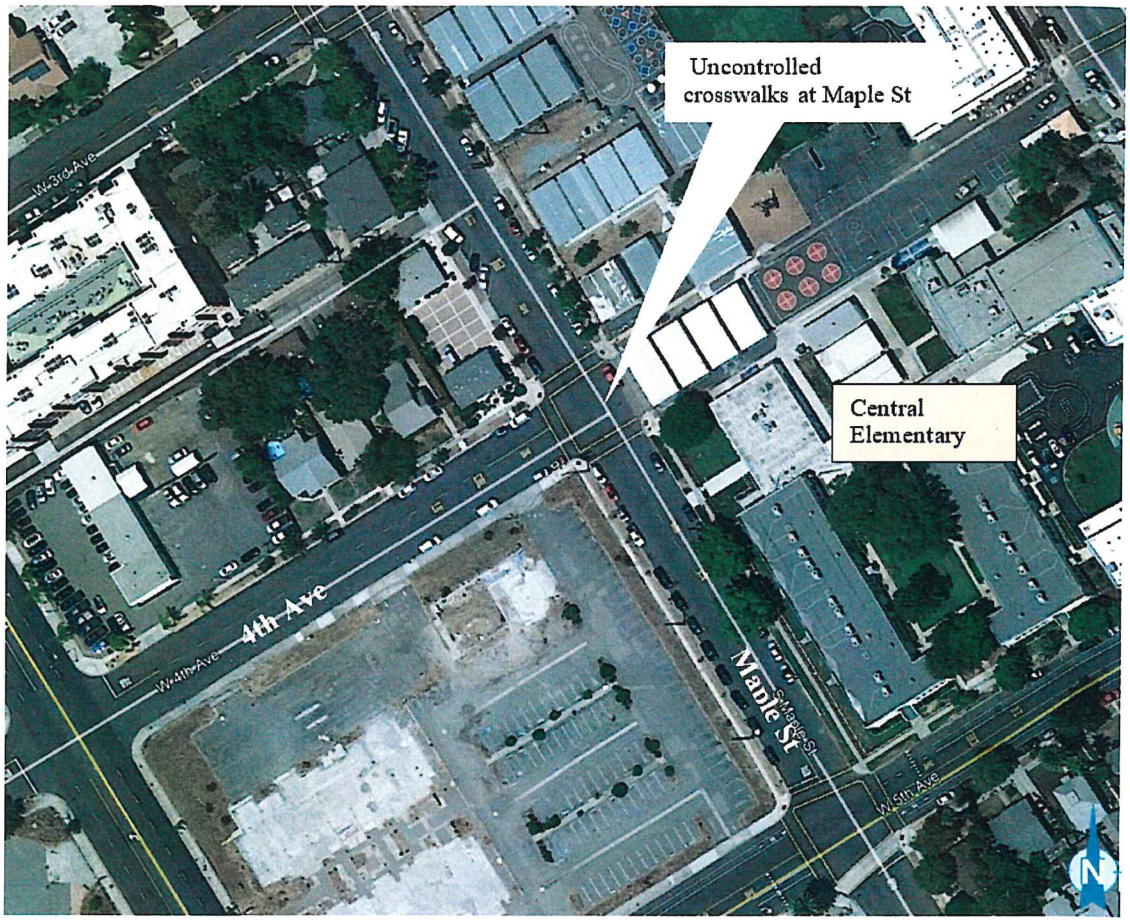

Figure 1 – Crosswalks at Maple Street and 4th Avenue

Figure 2 – Crosswalks on Maple Street at 4th Avenue

Proposed Improvements

Proposed improvements include high visibility crosswalks, new yield lines, double-sided crossing signage, advanced crosswalk signage and Rectangular-Rapid Flashing Beacons (RRFB) at the southern crossing in accordance with City's Crosswalk Policy.

City staff and COMPACT staff discussed the possibility of eliminating the uncontrolled crosswalk on the north side of Maple Street that is not being used by the students as much as the one on the south side because the southern crosswalk is closer to the school entrance and with staff presence. This option will be evaluated during final design of the project.

2. Crosswalk Improvements at Tulip Street and 15th Avenue (Felicita Elementary School) (estimated cost: $25,000)

The uncontrolled crosswalk on 15th Avenue at Tulip Street has been recommended by EUSD and COMPACT to be included on this year's TMPL. The intersection of Tulip Street and 15th Avenue is located at the southwest corner of the Felicita Elementary School campus.

Felicita Elementary School, located at 737 W. 13th Avenue, has a student population of approximately 550. Crosswalks are provided at the intersections of Tulip Street/13th Avenue and Redwood Street/13th Avenue. These are all-way-stopped intersections and therefore the crosswalks are stop-controlled. The intersection of Tulip Street/15th Avenue is a side-street-stop-controlled location with stop control only on Tulip Street. The uncontrolled crosswalk on 15th Avenue at this intersection is recommended for improvements by the school principal, parents, EUSD, and COMPACT.

City staff attended a meeting with the school principal, COMPACT staff, and parents to discuss the traffic safety concerns at crosswalks and around the school. Students heading to Boys and Girls Club for afterschool programs are required to cross at the uncontrolled crosswalk on 15th Avenue. The concerns brought to City staff related to this crosswalk location included cars not yielding to pedestrians and speeding on 15th Avenue. Figure 3 depicts the crosswalks adjacent to the school campus and Figure 4 shows the existing crosswalk on 15th Avenue.

Pedestrian counts provided by COMPACT reflect that 15 and 20 students cross the uncontrolled crosswalk on 15th Avenue at Tulip Street during the AM drop-off and that 20 and 30 students cross the uncontrolled crosswalk on 15th Avenue at Tulip Street during the PM pick-up time.

15th Avenue is a two-lane local street without a two-way-left-turn lane. On-street parking is allowed. There is a concrete sidewalk along the south side of the roadway but only along a portion of the roadway on the north side. The average daily traffic on 15th Avenue between S Tulip St and S Redwood St is 400 vehicles per day and the speed limit is 25 MPH.

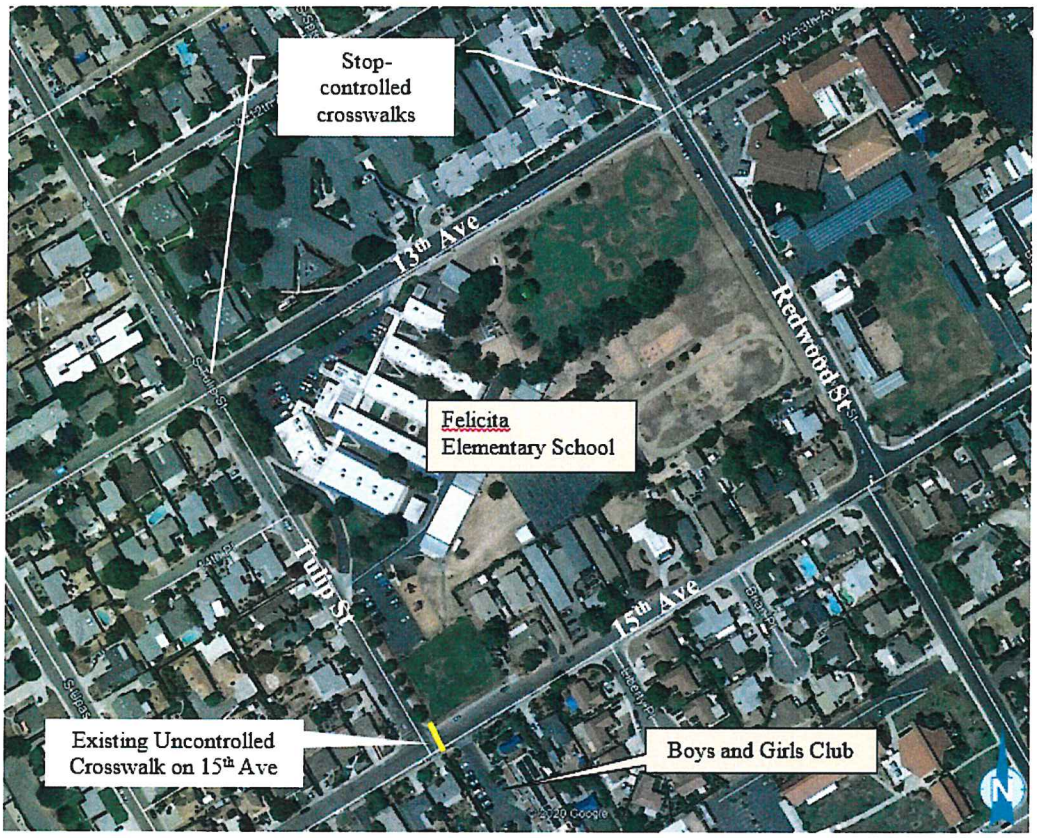

Figure 3 – Crosswalks around Felicita Elementary School

Figure 4 – Uncontrolled crosswalk at 15th Avenue

Proposed Improvements:

Proposed improvements include high visibility crosswalks, new yield lines, double-sided crossing signage, advanced crosswalk marking and signage, and RRFB for crosswalks on 15th Avenue in accordance with the City's Crosswalk Policy.

3. Crosswalk Improvements at Rose Street and Oak Hill Drive Intersection (Oak Hill Elementary School) (estimated cost: $6,000)

Pedestrian safety improvements at the intersection of Rose Street and Oak Hill Drive have been recommended by COMPACT to be included in this year's TMPL. Rose Street and Oak Hill Drive is an All-Way-Stop controlled intersection located about 1,500 feet west of Oak Hill Elementary School. Figure 5 shows the location of the intersection.

Oak Hill Elementary School with a student population of 720 is located at 1820 Oak Hill Drive. According to COMPACT staff, students and parents walking to school and crossing at this intersection have voiced traffic safety concerns; these include no striped crosswalks at the intersection and cars failing to stop for pedestrians crossing the street.

Rose Street is a two-lane local collector roadway without a two-way-left-turn lane. On-street parking is allowed on both sides of the street. Roadway speed limit for Rose Street is 30 MPH and the average daily traffic volume is 5,100 Vehicles per day. Oak Hill Drive is a two-lane local collector roadway with atwo-way-left-turn lane provided west of Rose Street. On-street parking is allowed on both sides of Oak Hill Drive which has a postedspeed limit of35 MPH and an average daily traffic volume of5,200 vehicles per day.

There is existing STOP AHEAD signage for all the four approaches of the intersection. However, there is no advanced pedestrian or school crossing signage approaching the intersection. Currently there is no crosswalk striping, designating an area for pedestrians to cross the street.

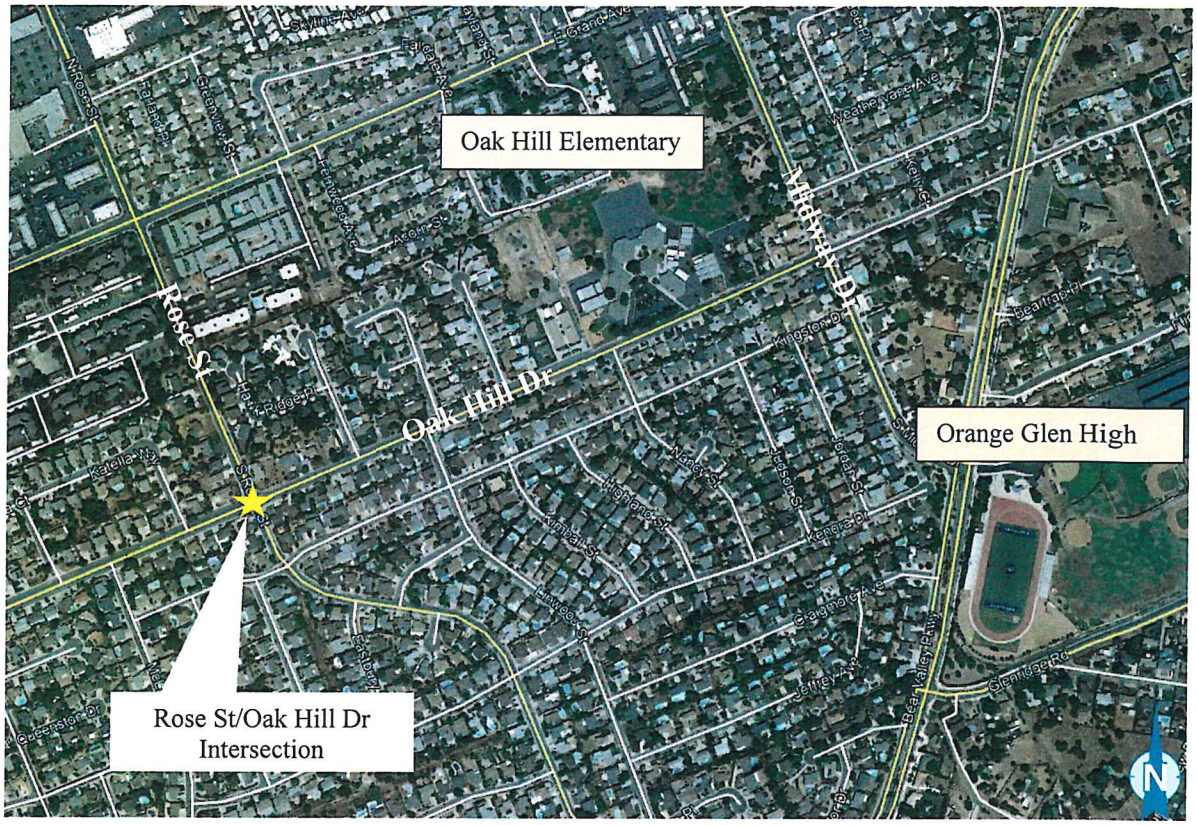

Figure 5 – Rose Street and Oak Hill Drive Intersection

Figure 6 – Existing Condition of Rose Street and Oak Hill Drive Intersection

Pedestrian counts collected by COMPACT reflect a total of 90 and 100 pedestrians crossing at this intersection during the school AM and PM peaks. The number of pedestrians crossing each respective leg of the intersection is summarized in Table 1.

Crossing Location	Number of pedestrians		
	AM Peak	PM Peak	Total
East Leg	10	15	25
West Leg	30	20	50
North Leg	35	45	80
South Leg	15	20	35
Total	90	100	190

Table 1 – Summary of Number of Pedestrians Crossing at Rose Street/Oak Hill Drive

Proposed Improvements

Proposed improvements include installing yellow crosswalks (two parallel bars type for controlled crosswalk) at all four legs of the intersection and installing advanced school crossing signage approaching the intersection. Increasing the size of the existing STOP signs at the intersection would increase drivers' awareness of this stop-controlled location.

4. Countdown Pedestrian Indications in School Zones (estimated cost: $6,000)

The City has a list of signalized intersections within school zones that have not been upgraded with countdown pedestrian indications. It is recommended that the top locations be considered for this year's TMPL.

Due to the large number of pedestrians crossing during the peak school traffic hours, some pedestrians/students cross the street late in the pedestrian crossing period and end up not able to finish crossing the street within the allocated pedestrian crossing time. By providing countdown indications of the remaining crossing time to the pedestrians, the amount of pedestrians not completing their crossing by the end of the pedestrian clearance time could be reduced and therefore reducing the amount of vehicle and pedestrian conflicts at the intersections.

Figure 7 – Countdown Pedestrian Indications

COMPACT has provided their recommendation for the top four signalized intersections to receive these pedestrian countdown upgrades based on the amount of students crossing at the location and proximity to existing schools. The following intersections are recommended for this year's TMPL.

1) El Norte Parkway and Ash Street (Conway Elementary School)
2) Bear Valley Parkway and Oak Hill Road (Oak Hill Elementary School and Orange Glen High School)
3) N. Broadway and Country Club Road/Rincon Street (N. Broadway Elementary School)
4) N. Broadway and Reidy Creek School (Reidy Creek Elementary School)

5. New Street Light on Eucalyptus Avenue (estimated cost: $15,000)

This project was on the 2019/20 TMPL presented to the commission at its July 2019 meeting but was not selected for implementation. At the request of the commissioners, this project is included on the 2020/21 TMPL for ranking and consideration.

The resident of 2203 Eucalyptus Avenue made a request to the City for a street light at the end of Eucalyptus Avenue just south of Gamble Lane. Eucalyptus Avenue is not a through street at Gamble Lane but with a fire gate installed for emergency access only. A location map and an image of Eucalyptus Avenue are shown on Figure 8. The resident has stated that there is not adequate illumination at the end of the street and the fire gate has been hit by vehicles. The street light requested at the end of Eucalyptus Avenue was originally proposed as part of the Tract 692 subdivision development and is shown on the subdivision improvement plans dated 1998. However, the street light did not get installed during the construction of the development project.

Eucalyptus Avenue is a two-lane local collector with parking allowed on both sides. There are a total of seven homes with driveway access onto Eucalyptus Avenue between Hillstone Avenue and the end of the roadway. There are three existing street lights on Eucalyptus Avenue north of Hamilton Lane as shown on Figure 8. "Not a Through Street" and "Dead End" signs were installed on Eucalyptus Avenue at Hamilton Lane and north of Hillstone Avenue to prevent unfamiliar drivers from entering this

segment of Eucalyptus Avenue. The city accident database did not show any injury accidents at this location in the past three years.

Since this complaint was received by the city, improvements have been made to enhance visibility of the fire gate at the end of the street. These improvements included installation of new "END" yellow warning signs on both sides of the fire gate to clearly indicate the end of the roadway, replacement of object markers on the fire gate to the latest CAMUTCD standard, and addition of white and red reflective tapes along the railing of the fire gate. Figure 9 shows the recent improvements on the end of Eucalyptus Avenue.

The request was made for the installation of a new standard street light with LED fixture, new conduit and lighting conductors to connect to the closest existing street light circuit on Eucalyptus Avenue. City staff will conduct detail field visit to identify existing street light circuit and existing street light conduits location for connection of the new street light if the project is selected for further evaluation and design.

Figure 8 – Recent Improvements on Eucalyptus Avenue

Figure 9 – Eucalyptus Avenue at Gamble Lane

TMPL Prioritization:

Using the point-based scoring criteria in this report, all five projects were evaluated and scored. Traffic Management Project List (TMPL) prioritization table, Table 2, shows the scores of each of the five projects. Top priority projects are recommended to be selected for further assessment and detailed design considering an estimated $50,000 Transportation and Community Safety budget.

Project Name	Measures of Prioritization								Score (max. 30)	Estimated Cost
	Road Condition (max. 6)		Road Usage (max. 6)		Anticipated Effectiveness (max. 6)		Problem Severity x 2 (max. 12)			
	Geometric Design	Roadside Improvement	Bike and Pedestrian Volume	Average Daily Traffic (ADT)	Feasibility of the Solution	Effectiveness of the Solution	Frequency of Accidents	Speeding Problem		
Crosswalk Improvements at Rose Street and Oak Hill Drive	1	2	3	1	3	3	6	2	21	$6,000
Countdown Pedestrian Indications in School Zones	1	1	3	3	3	2	4	4	21	$6,000
Crosswalk Improvements at Maple St and 4th Ave (Central Elementary School)	1	1	2	0	3	3	6	4	20	$25,000
Crosswalk Improvements at Tulip St and 15th Ave (Felicita Elementary School)	1	2	2	0	3	2	0	4	14	$25,000
New Street Light on Eucalyptus Ave	1	1	1	0	2	2	0	2	9	$15,000

Points Details:

Road Condition:

Geometric Design of Road: Not Standard = 3, Substandard = 2, Partially Substandard = 1

Roadside Improvement: Unimproved = 3, Partially Unimproved = 2, Mostly Improved with Gaps in Improvement = 1

Road Usage:

Bike and Pedestrian Volume: High = 3, Medium = 2, Low = 1

ADT: >7400veh/day = 3, >5400veh/day and =<7400 veh/day = 2, >3400veh/day and =<5400veh/day = 1

Anticipated Effectiveness:

Feasibility of the Solution: High=3, Medium=2, Low=1

Effectiveness of the Solution: High=3, Medium=2, Low=1

Problem Severity:

Frequency of Accidents: Accident Rate >= 1.5 = 6, 1.5 > Accident Rate >= 0.5 = 4, 0.5 > Accident Rate = 2

Speeding Problem: (85% - Design Speed) >= 10mph = 6, 5mph =< (85% - Design Speed) < 10mph=4, (85% - Design Speed) < 5mph=2

Table 2 – 2020/21 TMPL Prioritization Table

Recommendation: Staff recommends that the top 3 ranked project(s) be selected for funding.

Necessary Council Action: None.

Respectfully submitted,

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Reviewed by:

Owen Tunnell, PE
Assistant City Engineer

Approved by:

Julie Procopio, PE
Director of Engineering Services/City Engineer