

MEMORANDUM

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From: Kittelson and Associates

Project: CIP & TIM Fee Update: Western Slope

Subject: Draft Technical Memorandum 2-3: Existing and Future Deficiency



This memorandum summarizes the existing and future deficiency analysis including the Mitigation Fee Act (MFA) nexus justification for the improvement concepts to be advanced as part of the Major Capital Improvement Program (CIP) & Traffic Impact Mitigation (TIM) Fee Update. The analysis includes results for both the existing General Plan as well for the proposed Targeted General Plan Amendment and Zoning Ordinance Update (TGPA-ZOU).

The subsequent sections in this memorandum describe the following:

- Introduction
- Traffic Analysis Methodology
- Traffic Analysis Assumptions
- Level of Service Standards
- Roadway Segment Analysis
- Interchange Analysis
- Parallel Facility Analysis
- Existing Operations Results
- General Plan Operations Results
- Targeted General Plan Amendment Operations Results
- Summary of Roadway Deficiencies
- Interchange Deficiency Analysis Results
- Parallel Roadway Deficiency Analysis Results

INTRODUCTION

The existing and future deficiency analysis was performed based on the tools, methodologies and assumptions described in this memorandum. These are also described as part of Draft Technical Memorandum 2-1: Analysis Methodology.

TRAFFIC ANALYSIS METHODOLOGY

This section describes the approaches, tools, and methods used in the analysis.

Level of Service (LOS)

Circulation Policy TC-Xd of the El Dorado County General Plan provides level of service standards for County-maintained roads and state highways. LOS is a grading system that indicates the quality of service motorists experience on roadway facilities such as intersections or along roadway segments. LOS is a qualitative measure of the effect of a number of factors, including delay, vehicle speeds and travel time, traffic interruptions, freedom to maneuver, driving comfort and convenience. Levels of Service are designated "A" through "F" from best to worst, which cover the entire range of traffic operations that might occur. Level of Service (LOS) "A" through "E" generally represents traffic volumes at less or at roadway capacity, while LOS "F" represents over capacity and/or forced flow conditions.

County Roadways

Roadway segment LOS was determined by comparing traffic volumes on the study roadway segments with peak hour LOS capacity thresholds. The planning level capacity thresholds for different roadway classifications are shown in Table 1. These capacity thresholds are calculated based on the methodology contained in the Highway Capacity Manual (Transportation Research Board, 2010) (HCM 2010) and these thresholds were applied for the analysis of the 2004 El Dorado County General Plan.

Table 1. Local Roadways Level of Service LOS Criteria

Functional Classification	Number of Lanes	Planning Level Volume Threshold (vehicles per hour)				
		LOS A	LOS B	LOS C	LOS D	LOS E
Arterial, Divided	4	-	-	1,850	3,220	3,290
	6	-	-	2,760	4,680	4,710
Arterial, Undivided	2	-	-	850	1,540	1,650
	4	-	-	1,760	3,070	3,130
Multi-Lane Highway	4	-	2,240	3,230	4,250	4,970

Notes:
Two-lane highway (and arterial 2-lane) thresholds are based on HCM 2010, Exhibit 15-30, Class II Rolling, .09 K-factor, and D-factor of 0.6
Arterial volume thresholds are based on HCM 2010, Exhibit 16-14, K-factor of 0.09, posted speed 45 mi/h
Volumes are for both directions

Volume thresholds for 3-lane and 5-lane arterials were derived by linear interpolation between the 2- and 4-lane and between 4- and 6-lane thresholds respectively. Similarly, the volume thresholds for the seven lanes or more arterial will be calculated by linear extrapolation between 4-lane and 6-lane volumes.

State Highways

State highway LOS was determined using the methodologies for freeway and multilane highways and two-lane highways outlined in the HCM 2010, Chapters 11, 14, and 15. For freeway and multilane highways the calculation of the density of the traffic stream determines LOS. Density measures the average proximity of vehicles to each other in the traffic stream in passenger cars per lane per mile (pcplpm) of roadway. Freeway and multilane highways were evaluated using the HCM 2010 compatible spreadsheet models developed in-house.

For two-lane highways, the LOS calculation is dependent on the class of the roadway. Class I two-lane highways are highways where motorists expect to travel at high speeds. Class II two-lane highways are lower speed highways and serve scenic routes or areas of rugged terrain. Class III two-lane highways serve moderately developed areas with higher densities of local traffic and roadside access. For Class II highways, LOS is determined based on the percent time spent following (PTSF). This measure is calculated as the percentage of vehicles traveling at headways of less than three seconds. For Class III highways, the percent of vehicles traveling at free-flow speed conditions is used to determine LOS. This measure represents the ability of vehicles to travel at the posted speed limit. The two-lane highway analysis will be performed using the Highway Capacity Software (HCS).

Table 2 and Table 3 show the segment LOS criteria for multilane and two-lane highways respectively.

Table 2. Multi-Lane State Highways LOS Criteria

LOS	Free Flow Speed (mi/h)	Density (pc/mi/in)
A	All	>0 -11
B	All	>11-18
C	All	>18-26
D	All	>26-35
E	60	>35-40
	55	>35-41
	50	>35-43
	45	>35-45
F	Demand Exceeds Capacity	
	60	>40
	55	>41
	50	>43
	45	>45

Based on *Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2010, Exhibit 14-4

Table 3. Two-Lane State Highways LOS Criteria

LOS	Class II Highways: Percent Time Spent Following (%)	Class III Highways: Percent Free-Flow Speed (%)
A	0-40	>91.7
B	>40-55	>83.3-91.7
C	>55-70	>75.0-83.3
D	>70-85	>66.7-75.0
E	>85	≤66.7

Based on *Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2010, Exhibit 15-3

US 50

US 50 mainline segments were evaluated using the methodologies contained in the HCM 2010. The LOS will be reported for each study segment type based on density measures.

Given a limitation of the latest Highway Capacity Software (HCS 2010) for evaluating special purpose lanes (e.g., HOV lanes, auxiliary lanes, truck climbing lanes) freeway mainline segments were evaluated using the HCS 2010 software compatible spreadsheet models developed in-house. The freeway LOS criteria are provided in Table 4.

Table 4. Freeway Mainline Level of Service (LOS) Criteria

LOS	Density (passenger cars per lane per mile)
A	≤11
B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	>45 or Demand > Capacity

Based on *Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2010, Exhibit 11-5

TRAFFIC ANALYSIS ASSUMPTIONS

Generalized operational parameters that will be used for the traffic analysis are provided below:

Ideal Saturation Flow Rate:	Freeway General Purpose Lanes: HCM 2010 Exhibit 10-5; Freeway HOV Lanes: 1,650 ¹ vehicles per hour per lane (vphpl); Freeway Auxiliary Lanes > 1 mile: 900 ² vphpl Freeway Auxiliary Lanes < 1 mile: 400 vphpl
Base Free Flow Speeds:	All: Posted speed limit plus 5 mph
Peak Hour Factor (PHF):	Freeway mainline: Existing: where counts exist: Caltrans Performance Measurement System (PeMS) and Caltrans Published Volumes; where counts do not exist: 0.92; Future: 0.92
	State Highways: Existing: where counts exist: PeMs and Caltrans Published Volumes; where counts do not exist: 0.92; Future: 0.92
Peak Hour Directional (D) Factor:	Existing: Caltrans PeMS or Caltrans/County published reports (average weekday) Future: Same as Existing average weekday if available – other: model D Factor
Peak Hour (K) Factor:	Existing: PeMS or Caltrans/County published reports (average weekday) Future: Same as Existing average weekday if available – other: model K Factor
Analysis Conditions:	Annual Average Weekday Conditions
Traffic Volumes:	Existing: Freeways/State Highways: Caltrans AADT published volumes adjusted to average weekday peak hour condition via K and D factors. US 50 between County line and Ponderosa Road: higher volumes between Caltrans AADT published

¹ Caltrans High-Occupancy Vehicle Guidelines, Caltrans 2003.

² 900 vphpl is a typical default assumption for auxiliary lanes greater than 1 mile and has been accepted by Caltrans in previous reports. See SC101 HOV Report June 2010.

volumes adjusted to average weekday and Caltrans Performance Measurement System (PeMS) average weekday (April)

Existing: Local Roadways: County published data

Future: Counts adjusted by model growth per National Cooperative Highway Research Program 255 method (NCHRP 255)

Lane Width: All: 12 feet, or consult Caltrans or County Staff

Driver Population Factor: All: 1.00 – local drivers

Ramp Density (ramps/mi): Freeway mainline: Aerial measured

Access Density (points/mi): State Highways/Local Roadways: Aerial measured

Heavy Vehicles: Freeway/State Highways– Caltrans published Truck Annual Average Daily Traffic (AADT) Data, or 5 percent default (4% on US 50);
State Highways/Local Roadways – 5 percent default, or consult Caltrans or County staff

LEVEL OF SERVICE STANDARDS

The following criteria are established to determine whether the vehicular traffic on a roadway facility exceeds the standard operating conditions.

County Roadways

Circulation Policy TC-Xd of the El Dorado County General Plan provides level of service standards for County-maintained roads and state highways as follows:

Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2. The volume to capacity ratio of the roadway segments listed in Table TC-2 shall not exceed the ratio specified in that table.

Roadways in the community regions are evaluated against LOS E standard, while those in the rural regions and rural centers were analyzed against LOS D. Figure 1 shows level of service threshold on the local roadways, with exceptions listed in the Table TC-2 of the County's Circulation Element.

State Facilities

County's Policy TC-Xd is applicable not only to the County roadways, but also to the state facilities. As such, traffic conditions for state facilities within the unincorporated areas of the County shall not be worse than LOS E in the community regions and LOS D in the rural center and rural regions, with exception to the locations specified in Table TC-2.

U.S. Highway 50

Table 5 presents LOS thresholds used for US 50. These standards are consistent with the concept LOS established by Caltrans, the County, and the Table TC-2 of the 2004 El Dorado County General Plan.

Table 5. US 50: Level of Service Thresholds

Location Description	Begin Post Mile	End Post Mile	Level of Service Threshold
Sacramento/El Dorado County Line to Latrobe Road	0	0.857	LOS E
Latrobe Road to Cambridge Road	0.857	4.962	LOS D
Cambridge Road to Shingle Springs Drive	4.962	8.564	LOS E
Shingle Springs Drive to El Dorado Road	8.564	14.011	LOS D
El Dorado Road to Canal Street	14.011	17.52	LOS E
Canal Street to Mosquito Road	17.52	18.517	LOS F
Mosquito Road to Point View Drive	18.517	20.296	LOS E
Point View Drive to Old Highway, Camino	20.296	23.957	LOS D
Old Highway, Camino to Old Carson Road	23.957	34.219	LOS E
Old Carson Road to Ice House Road	34.219	39.772	LOS D
Ice House Road to Echo Lake Road	39.772	65.619	LOS F

Source: US 50 Transportation Concept Report and Corridor System Management Plan, Caltrans District 3, June 2014, 2004 El Dorado County General Plan, July 2004.

State Route 49

In the Transportation Concept Report (Caltrans, 2000), the concept LOS is F south of the community of El Dorado and through the City of Placerville. All other segments have a concept LOS E. Since the County adopted exceptions for this roadway, County's LOS standard for rural community (LOS D) was used as the operational criteria for segments from Amador/El Dorado County Line to Union Mine Road and from SR 193 (south) to SR 193 (north).

State Route 193

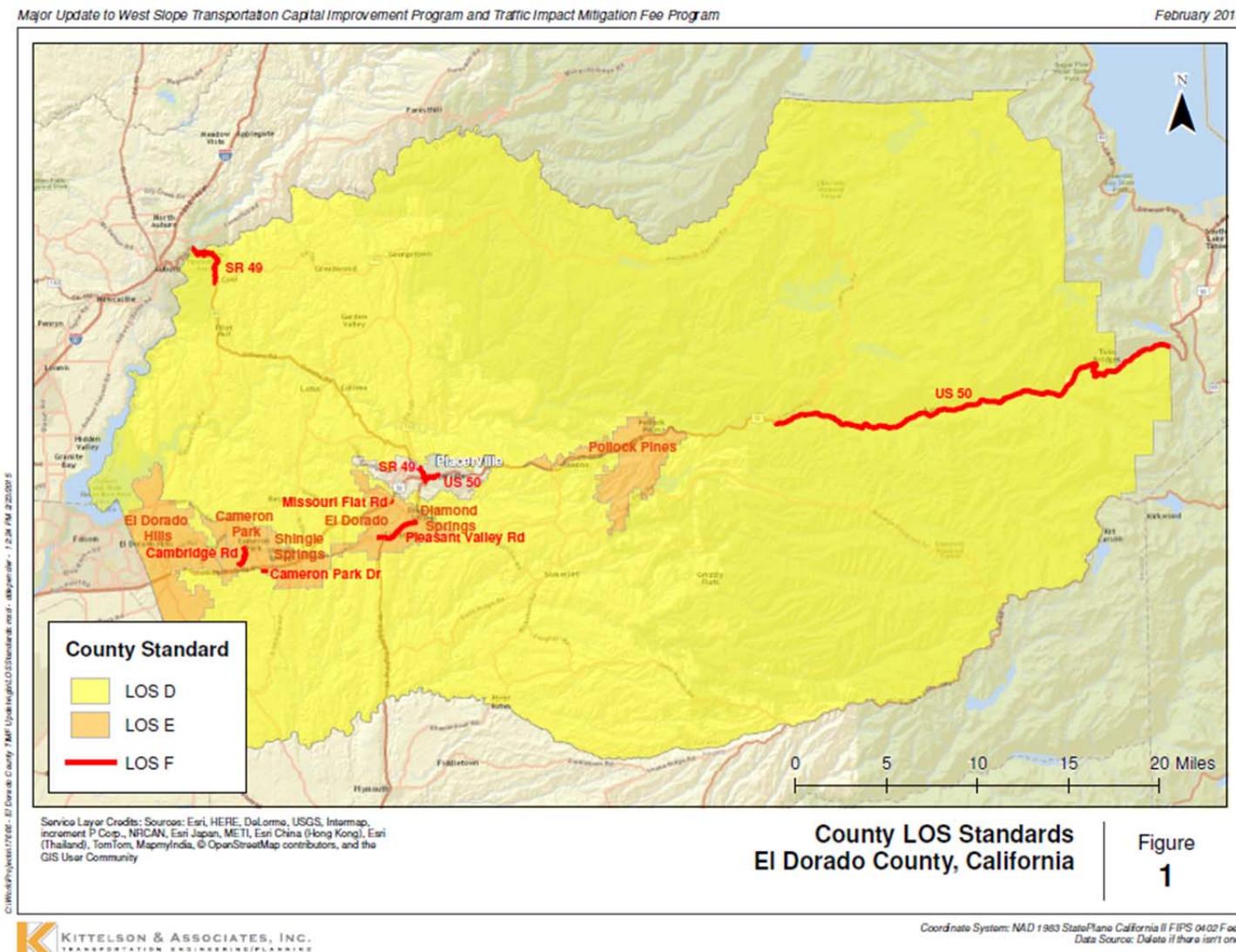
In the Transportation Concept Report (Caltrans, 2011), the concept LOS through El Dorado County is LOS D. The concept LOS is consistent with the County standard.

State Route 153

The Transportation Concept Report (Caltrans, 2011) established a concept LOS of E for SR 153 within El Dorado County. Since the roadway runs through a defined rural community, the County's LOS D standard was used as the operational standard for this analysis.

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Figure 1. Level of Service Thresholds for Roadways



ROADWAY SEGMENT ANALYSIS

This section provides the operations results by facility type. The facility types include County arterial roadways and state highways including freeways, multilane highways, and two-lane highways. A total of 57 County roadways were analyzed spanning nearly 150 segments. The entire state highway system was analyzed (i.e., US 50, SR 49, SR 193, SR 153) spanning 60 segments. Selection of roadways and roadway segmentation was based on a number of criteria including:

- roadway/segment was analyzed in previous TIM fee analysis;
- roadway/segment is currently listed in the County's current Capital Improvement Program;
- roadway/segment was included as part of the County's Travel Demand Model baseline validation analysis;
- roadway/segment is a critical high volume location with known congestion issues; and,
- roadway/segment is considered to have future importance for accommodating planned development growth.

Given the need for all future traffic projections to be adjusted based on the NCHRP 255³ principles, the choice of County roadway segments to analyze was also influenced by the availability of recent weekday (Tuesday-Thursday) daily and peak hour traffic counts (less than 3 years old). To ensure that "raw" model volumes would not form the basis for determining roadway operations, new traffic counts were performed by the County for all roadways that met the above criteria but did not have a recent traffic count. For US 50, average weekday bi-directional peak hour volumes were based on the most recent Caltrans published Annual Average Daily Traffic volumes using average weekday AM/PM peak hour (K Factor) and AM/PM peak directional splits (D Factor) derived from Caltrans PeMs counts taken during April/May 2014.

All state facilities were analyzed based on the HCM 2010 operational analysis methodology and LOS criteria described in the previous section. All local County roadways were analyzed based the HCM2010 planning method and LOS criteria, also described in the previous section.

The analysis scenarios include:

- 2015 Baseline (Existing) Scenario

To ensure that the future traffic growth resulting from new development growth is not double counted, all built and occupied permits between 2010 (model validation baseline year) and January 1st 2015 were reflected in the baseline travel demand model land use to establish an updated model analysis baseline. The 2010 baseline model network was also modified to include only infrastructure improvements either completed or under construction by January 1st 2015.

³ For a description of the NCHRP-255 adjustments process – see subsequent Roadway Segment Volume discussion.

- 2035 General Plan Land Use Scenario

This scenario reflects the approved allocation of growth in the County's General Plan – and assumes growth occurring at approximately 1 percent annual average growth rate over the 20-year planning horizon (2015-2035). To ensure that the traffic implications of future development that is anticipated to occur after January 1st 2015 is specific to the County's existing roadway infrastructure, this land use scenario was analyzed relative to the modified 2015 model network described above.

- Targeted General Plan Amendment Land Use Scenarios assuming Baseline Network (no-build)

This scenario reflects the proposed growth allocation of the Targeted General Plan Amendment and Zoning Ordinance Update (TGPA-ZOU) – again assuming growth occurring at approximately 1 percent annual average growth rate over the 20-year planning horizon (2015-2035). Given that the TGPA-ZOU is currently going through the environmental process, inclusion of this scenario is simply for information purposes at this time. To ensure that the traffic implications of future development that is anticipated to occur after January 1st 2015 is specific to the County's existing roadway infrastructure, this land use scenario was analyzed relative to the modified 2015 model network described above.

ROADWAY SEGMENT VOLUMES

To address for systematic modeling error, post-processing adjustments must be performed. The recommended procedure is based on the NCHRP Report 255, 1982. NCHRP-255 adjustments entail using model generated link-based growth factors (computed variation between base year and forecast year model volumes) to adjust baseline traffic counts to reflect future conditions. For each count location, traffic growth estimates were generated using both the Ratio and the Difference method and taking the average between the two methods.

Baseline traffic counts and the 2035 future year "raw" and NCHRP 255 adjusted segment volumes used to determine future year operations are provided in Attachment A. For reporting purposes, forecasted volumes were rounded to the nearest ten.

All analysis scenarios reflect AM/PM peak hours during average weekday (Tues-Thurs) traffic conditions. Peak hours are confined to the weekday peak commute hour periods of 7:00 AM to 9:00 AM in the morning and between 4:00 PM – 6:00 PM in the afternoon. These forecasts do not reflect peak season or peak weekend traffic conditions which are primarily dominated by interregional traffic which is not appropriate for analysis of a local fee program.

INTERCHANGE ANALYSIS

There are a total of 21 interchanges operating along US 50 in El Dorado County including:

1. El Dorado Hills Boulevard Interchange
2. Silva Valley Parkway Interchange (under construction)
3. Bass Lake Road Interchange
4. Cambridge Road Interchange
5. Cameron Park Drive Interchange
6. Ponderosa Road Interchange
7. Shingle Springs Drive Interchange
8. Red Hawk Parkway Interchange
9. Greenstone Road Interchange
10. El Dorado Road Interchange
11. Missouri Flat Road Interchange
12. Placerville Drive (West) Interchange
13. Ray Lawyer Drive Interchange
14. Placerville Drive (East) Interchange
15. Mosquito Road Interchange
16. Schnell School Road Interchange
17. View Point Drive Interchange
18. Smith Flat Road Interchange
19. Cedar Grove/Camino Interchange
20. Pollock Pines/Cedar Grove Interchange
21. Sly Park Road Interchange

Currently, there are eight interchanges included in the TIM fee CIP projects. These interchanges include:

- El Dorado Hills Boulevard Interchange
- Silva Valley Parkway Interchange
- Bass Lake Road Interchange
- Cambridge Road Interchange
- Cameron Park Drive Interchange
- Ponderosa Road Interchange
- El Dorado Road Interchange
- Missouri Flat Road Interchange

A screening assessment of these interchanges was used to reconfirm the deficiency analysis finding documented in completed operationally-based CIP traffic studies. Given that the detailed operational studies of these interchanges were based on the previous version of the El Dorado County travel demand model, the screening assessment focused on the comparative differences between the future year forecasts generated by the previous model version and the current model version at each interchange. For each interchange (both TIM fee CIP and non-TIM fee CIP interchange), ramp and interchange over-crossing link volumes were compared. If the current model yielded equal or higher volumes (in absolute terms) and/or annual growth at a one or more ramps and/or on the overcrossing than the previous model, the previously identified operational issues were considered reconfirmed. However, reconfirmation of deficient conditions for the interchange deficiency does necessarily mean that all originally identified CIP improvements for a given interchange would be carried forward. The extent of the needed improvement to remedy previously identified operational issues will be determined in the next phase of the Western Slope CIP & TIM Fee Update study.

PARALLEL FACILITY ANALYSIS

A determination for the need to include parallel facilities into the TIM Fee CIP list was based on the deficiency assessment for US 50 and County roadways on a case by case basis. Given that parallel facilities provide corridor capacity and provide congestion relief to the primary deficient facility, parallel facility improvements are considered candidates for TIM Fee CIP improvements.

EXISTING OPERATIONS RESULTS

Existing Operations Results for State Facilities

The LOS analysis results for freeways, multilane highways, and two-lane highways are provided in Attachment B (Tables B-1, B-2, B-3). Based on the results, all state highway facilities are shown to operate within established LOS standards during average weekday AM and PM peak hour conditions.

Existing Operations Results for Local Roadways

The LOS analysis results for local roadways are presented in Attachment B (Table B-4). Given its geometric and operating characteristics, Green Valley Road segments# 51 and 53-62 were analyzed using the HCM 2010 operational method. No deficiency was identified for the study segments under existing conditions except for the following location:

- Green Valley Road west of Sophia Parkway: AM and PM peaks

GENERAL PLAN OPERATIONS RESULTS

General Plan Operations Results for State Facilities

Under the existing General Plan assumptions, the LOS analysis results for freeways, multilane highways, and two-lane highways are provided in Attachment C (Tables C-1, C-2, C-3).

All state facilities except for the US 50 segments listed below are projected to meet the LOS threshold:

- El Dorado/Sacramento County Line to Latrobe Road: eastbound direction in the PM peak
- Latrobe Road to Bass Lake Road: westbound direction in the AM peak
- Bass Lake Road to Cambridge Road: eastbound direction in the PM peak

General Plan Operations Results for Local Roadways

The LOS analysis results for local roadways under the existing General Plan assumptions are shown in Attachment C (Table C-4).

The following local roadways are projected to exceed the County's LOS standards by 2035:

- Cameron Park Drive south of Hacienda Drive: PM peak
- Green Valley Road west of Sophia Parkway: AM and PM peaks
- Green Valley Road west of Lotus Road: PM peak
- Latrobe Road north of Golden Foothill Boulevard: AM and PM peaks
- White Rock Road west of Windfield Way: AM and PM peaks
- White Rock Road at Sacramento/El Dorado County Line: AM and PM peaks

It should be noted that all of the above locations are located in designated community regions except for Green Valley Road west of Lotus Road.

TARGETED GENERAL PLAN AMENDMENT (TGPA-ZOU) OPERATIONS RESULTS

TGPA-ZOU Operations Results for State Facilities

Under the Targeted General Plan Amendment assumptions, the LOS analysis results for freeways, multilane highways, and two-lane highways are provided in Attachment D (Tables D-1, D-2, D-3).

Similar to General Plan results, all state facilities except for the following US 50 segments are projected to operate within LOS thresholds:

- El Dorado/Sacramento County Line to Latrobe Road: eastbound direction in the PM peak
- Latrobe Road to Bass Lake Road: westbound direction in the AM peak
- Bass Lake Road to Cambridge Road: eastbound direction in the PM peak

TGPA-ZOU Operations Results for Local Roadways

The LOS analysis results for local roadways under the Targeted General Plan Amendment assumptions are shown provided in Attachment D (Table D-4).

The following local roadways are projected to operate with unacceptable LOS:

- Cameron Park Drive south of Hacienda Drive: PM peak
- Green Valley Road west of Sophia Parkway: AM and PM peaks
- Green Valley Road west of Lotus Road: PM peak
- Latrobe Road north of Golden Foothill Boulevard: AM and PM peaks
- Missouri Flat Road south of China Garden Road: PM peak
- White Rock Road west of Windfield Way: AM and PM peaks
- White Rock Road at Sacramento/El Dorado County Line: AM and PM peaks

It should be noted that all of the above locations are located in the community region except for Green Valley Road west of Lotus Road.

SUMMARY FOR ROADWAYS DEFICIENCIES

A summary of all deficient roadways is shown in Table 6. Under existing conditions, all local roadway segments analyzed were shown to operate within County standards except Green Valley Road segment west of Sophia Parkway. All state facilities were also determined to operate within the established General Plan LOS standards. Under 2035 conditions, three segments of US 50 and six local roadway segments were projected to exceed LOS standards. Results assuming the TGPA-ZOU were similar to the General Plan operations with exception for Missouri Flat Road.

Table 6. Summary for Deficiency Roadways by Scenario

Facility Type	Baseline Roadway	2035 General Plan Roadway	2035 TGPA-ZOU Roadway
State Highways	None	1. US 50 (El Dorado/Sacramento County Line to Latrobe Road) 2. US 50 (Latrobe Road to Bass Lake Road) 3. US 50 (Bass Lake Road to Cambridge Road)	1. US 50 (El Dorado/Sacramento County Line to Latrobe Road) 2. US 50 (Latrobe Road to Bass Lake Road) 3. US 50 (Bass Lake Road to Cambridge Road)
	Total: 0 segment	Total: 3 segments	Total: 3 segments
Local Roads	1. Green Valley Road (west of Sophia Parkway)	1. Cameron Park Drive (south of Hacienda Drive) 2. Green Valley Road (west of Sophia Parkway) 3. Green Valley Road (west of Lotus Road) 4. Latrobe Road (north of Golden Foothill Parkway) 5. White Rock Road (west of Windfield Way) 6. White Lock Road (at El Dorado/Sacramento County Line)	1. Cameron Park Drive (south of Hacienda Drive) 2. Green Valley Road (west of Sophia Parkway) 3. Green Valley Road (west of Lotus Road) 4. Latrobe Road (north of Golden Foothill Parkway) 5. Missouri Flat Road (south of China Garden Road) 6. White Rock Road (west of Windfield Way) 7. White Rock Road (at El Dorado/Sacramento County Line)
	Total: 1 segment	Total: 6 segments	Total: 7 segments

INTERCHANGE DEFICIENCY ANALYSIS RESULTS

Based on the comparative analysis of the “old” vs. “new” travel model forecasts at each interchange’s ramps and over-crossing segments, the results re-confirm that the following interchange deficiency assessments (based on previous studies) would continue to hold with the new model (based on a combination of comparing 2035 PM peak hour volumes and average annual growth rates).

- El Dorado Hills Boulevard Interchange
- Silva Valley Parkway Interchange (by virtue of both El Dorado Hills and Bass Lake Road interchanges being deficient)
- Bass Lake Road Interchange

- Cambridge Road Interchange
- Cameron Park Drive Interchange
- Ponderosa Road Interchange
- El Dorado Road Interchange

Comparison results for the Missouri Flat Road Interchange show lower forecasted traffic volumes for all ramps and overcrossing (approximately 75% of the previous model volumes). Based on these lower traffic projections, this comparison indicates that further improvements may not be required at the Missouri Flat Road Interchange. The County has recently commissioned a study of the area called the Missouri Flat Area Master Circulation & Financing Plan Phase II (MC&FP Phase II). The study will identify future land use options and infrastructure needs beyond what is currently assumed in the General Plan. Given that the MC&FP Phase II study will not be completed prior to the completion of this analysis, the “growth potential” assessment in the vicinity of this interchange will not be fully reflected in this analysis. Based on MC&FP Phase II study, further analysis will be performed to determine if and when additional improvements will be required at the Missouri Flat Road Interchange.

All other interchanges with the exception of the Red Hawk Parkway do not have volumes or growth to confirm that they are deficient. Red Hawk Parkway serves only Red Hawk Casino and is constructed only to access the Casino.

A summary of interchange volumes and annual growth rate comparisons between the previous and the current travel models are shown in Attachment E (Table E-1 and Table E-2). Table E-1 represents a comparison for the General Plan scenarios.

PARALLEL FACILITY DEFICIENCY ANALYSIS RESULTS

Based on identified US 50 mainline and County roadway deficiencies, the following roadway extensions should remain/be added to the TIM Fee CIP list:

- Saratoga Way Extension (based on it parallels a deficient US 50 segment - County Line to Cambridge Road Interchange)
- Country Club Drive (based on it parallels a deficient US 50 segment - County Line to Cambridge Road Interchange)
- Latrobe Connector (based on providing relief to deficient White Rock Road)

ATTACHMENT A

ROADWAY SEGMENT VOLUME FORECASTS

(all segments presented in alphabetical order)

NAME	LOCATION	Count Two-Way Volume		Model Two-Way Volume (Interim Step – Not Used for LOS Operations)						Final Adjusted Two-Way Forecast Volume (Final Volumes – Used for LOS Operations)			
		2014 AM	2014 PM	2015 AM	2015 PM	2035 GP AM	2035 GP PM	2035 TGPA-ZOU AM	2035 TGPA-ZOU PM	2035 GP AM	2035 GP PM	2035 TGPA-ZOU AM	2035 TGPA-ZOU PM
White Rock Rd	At County Line	834	1026	1107	777	2966	3124	2821	3045	2,240	3,380	2,130	3,300
White Rock Rd	East of Latrobe Rd	1036	1444	1359	1577	1409	1634	1407	1656	1,090	1,500	1,080	1,520
White Rock Rd	West of Latrobe Rd	999	1121	1137	893	2607	2690	2456	2652	2,300	2,920	2,160	2,890
Latrobe Rd	North of Golden Foothill Pkwy South	1601	1819	1480	1516	2025	2134	1977	2066	2,170	2,500	2,120	2,430
Serrano Pkwy	East of Silva Valley Pkwy	1424	947	1316	1213	1919	1689	1707	1577	2,060	1,370	1,840	1,280
Bass Lake Rd	North of Serrano Pkwy	824	816	933	941	1227	1265	1161	1192	1,110	1,120	1,040	1,050
French Creek Rd	North of Old French Town Rd	178	214	252	261	344	291	337	302	260	250	260	260
Ponderosa Rd	North of Jackpine Rd	147	128	38	33	41	36	49	37	160	140	180	140
N Shingle Rd	South of Green Valley Rd	414	440	623	582	763	755	829	815	540	600	590	650
Mother Lode Dr	East of French Creek Rd	904	809	928	911	1068	1102	1053	1074	1,050	990	1,030	970
Rock Creek Rd	East of SR 193	19	18	1	1	1	1	2	2	40	40	40	40
White Rock Rd	West of Windfield Way	824	816	1290	997	3035	3245	2915	3177	1,940	2,660	1,870	2,600
El Dorado Hills Blvd	South of Francisco Dr	1324	1299	1220	1277	1276	1327	1277	1323	1,390	1,350	1,390	1,350
Sly Park Rd	East of Mt Aukum Rd	242	272	233	247	273	290	305	324	290	320	320	360
Sly Park Rd	East of Mormon Emigrant Trail	234	324	398	414	475	491	524	540	300	400	340	440
Sly Park Rd	South of Pony Express Trail	581	734	417	504	450	539	475	567	630	780	660	820

ATTACHMENT B

EXISTING OPERATIONS RESULTS

(all segments presented in alphabetical order)

ID	Name	Location	Area	Type	LOS Threshold	2014			
						AM Volume	LOS	PM Volume	LOS
139	Sly Park Rd	South of Pony Express Trail	Community Region	2AU	E	581	A-C	734	A-C
140	Snows Rd	North of Newtown Rd	Rural	2AU	D	80	A-C	83	A-C
141	Snows Rd	South of Carson Rd	Community Region	2AU	E	337	A-C	212	A-C
142	South Shingle Rd	East of Latrobe Rd	Rural	2AU	D	98	A-C	75	A-C
143	South Shingle Rd	North of Barnett Ranch	Rural	2AU	D	192	A-C	217	A-C
144	South Shingle Rd	South of Sunset Ln	Community Region	2AU	E	434	A-C	555	A-C
145	Starbuck Rd	North of Green Valley Rd	Community Region	2AU	E	113	A-C	149	A-C
146	Union Ridge Rd	West of Hassler Rd	Rural	2AU	D	32	A-C	42	A-C
147	Wentworth Springs Rd	West of Quintette Rd	Rural	2AU	D	29	A-C	50	A-C
148	White Rock Rd	West of Windfield Way	Community Region	2AU	E	824	A-C	816	A-C
149	White Rock Rd	At County Line	Community Region	2AU	E	834	A-C	1026	D
150	White Rock Rd	East of Latrobe Rd	Community Region	2AU	E	1036	D	1444	D
151	White Rock Rd	West of Latrobe Rd	Community Region	4AD	E	999	A-C	1121	A-C

A-C defined as operating between LOS A-C per HCM 2010

Indicates deficiency

ATTACHMENT C

2035 FORECAST

GENERAL PLAN OPERATIONS RESULTS

(all segments presented in alphabetical order)

ID	Name	Location	Area	Type	LOS Threshold	2035 General Plan			
						AM Volume	LOS	PM Volume	LOS
139	Sly Park Rd	South of Pony Express Trail	Community Region	2AU	E	630	A-C	780	A-C
140	Snows Rd	North of Newtown Rd	Rural	2AU	D	100	A-C	100	A-C
141	Snows Rd	South of Carson Rd	Community Region	2AU	E	370	A-C	240	A-C
142	South Shingle Rd	East of Latrobe Rd	Rural	2AU	D	100	A-C	80	A-C
143	South Shingle Rd	North of Barnett Ranch	Rural	2AU	D	200	A-C	220	A-C
144	South Shingle Rd	South of Sunset Ln	Community Region	2AU	E	440	A-C	670	A-C
145	Starbuck Rd	North of Green Valley Rd	Community Region	2AU	E	160	A-C	200	A-C
146	Union Ridge Rd	West of Hassler Rd	Rural	2AU	D	70	A-C	90	A-C
147	Wentworth Springs Rd	West of Quintette Rd	Rural	2AU	D	40	A-C	60	A-C
148	White Rock Rd	West of Windfield Way	Community Region	2AU	E	1940	F	2660	F
149	White Rock Rd	At County Line	Community Region	2AU	E	2240	F	3380	F
150	White Rock Rd	East of Latrobe Rd	Community Region	2AU	E	1090	D	1500	D
151	White Rock Rd	West of Latrobe Rd	Community Region	4AD	E	2300	D	2920	D

A-C defined as operating between LOS A-C per HCM 2010
 Indicates deficiency

ATTACHMENT D

2035 FORECAST

TARGETED GENERAL PLAN AMENDMENT OPERATIONS RESULTS

(all segments presented in alphabetical order)

ID	Name	Location	Area	Type	LOS Threshold	2035 TGPA-ZOU			
						AM Volume	LOS	PM Volume	LOS
139	Sly Park Rd	South of Pony Express Trail	Community Region	2AU	E	660	A-C	820	A-C
140	Snows Rd	North of Newtown Rd	Rural	2AU	D	110	A-C	110	A-C
141	Snows Rd	South of Carson Rd	Community Region	2AU	E	390	A-C	250	A-C
142	South Shingle Rd	East of Latrobe Rd	Rural	2AU	D	100	A-C	80	A-C
143	South Shingle Rd	North of Barnett Ranch	Rural	2AU	D	200	A-C	220	A-C
144	South Shingle Rd	South of Sunset Ln	Community Region	2AU	E	450	A-C	690	A-C
145	Starbuck Rd	North of Green Valley Rd	Community Region	2AU	E	170	A-C	210	A-C
146	Union Ridge Rd	West of Hassler Rd	Rural	2AU	D	80	A-C	100	A-C
147	Wentworth Springs Rd	West of Quintette Rd	Rural	2AU	D	40	A-C	60	A-C
148	White Rock Rd	West of Windfield Way	Community Region	2AU	E	1870	F	2600	F
149	White Rock Rd	At County Line	Community Region	2AU	E	2130	F	3300	F
150	White Rock Rd	East of Latrobe Rd	Community Region	2AU	E	1080	D	1520	D
151	White Rock Rd	West of Latrobe Rd	Community Region	4AD	E	2160	D	2890	D

A-C defined as operating between LOS A-C per HCM 2010
 Indicates deficiency

ATTACHMENT E

INTERCHANGE VOLUME COMPARISON

(all segments presented from west to east)

Table E-1. Interchange Volume Comparison between the Previous and the Current Models – 2035 GP

Interchange	Previous Model Future PM PK									Current Model Future PM PK									
	Ramps					Overpass				Ramps					Overpass				
	EB OFF	EB ON	WB OFF	WB ON	Tot_Ramps	NB	SB	Total Ovrpas	EB OFF	EB ON	WB OFF	WB ON	Tot_Ramps	NB	SB	Total Ovrpas			
El Dorado Hills Blvd	1368	1073	1086	941	4468	2678	2262	4940	1393	815	563	1538	4309	3143	1211	4354			
Silva Valley Pkwy	1252	1531	1469	694	4946	1613	1856	3469	739	731	455	405	2330	909	640	1549			
Bass Lake Rd	897	376	506	670	2449	878	427	1305	898	242	395	483	2018	875	365	1240			
Cambridge Rd	892	154	152	586	1784	873	190	1063	851	82	172	654	1759	770	167	937			
Cameron Park Dr	1523	454	797	1228	4002	1961	849	2810	947	763	628	1000	3338	1932	1251	3183			
Ponderosa Rd	1075	640	735	874	3324	1266	826	2092	1213	347	304	889	2753	1453	699	2152			
Shingle Springs Dr	222	123	111	211	667	211	111	322	240	119	145	149	653	207	145	352			
Red Hawk Pkwy	326	139	52	410	927	326	139	465	140	144	98	153	535	239	297	536			
Greenstone Rd	219	81	126	237	663	299	144	443	179	61	87	257	584	372	149	521			
El Dorado Rd	205	342	305	187	1039	265	425	690	226	195	226	206	853	297	353	650			
Missouri Flat Rd	932	931	817	996	3676	1498	1318	2816	730	737	685	566	2718	962	1159	2121			
Placerville Dr (West)	875	332	222	887	2316	1061	534	1595	633	107	0	743	1483	729	79	808			
Schnell School Rd	2	257	193	1	453	1061	534	1595	122	156	38	261	577	251	75	326			
View Point Dr	431	88	61	282	862	306	102	408	330	19	3	211	563	232	11	243			
Smith Flat Rd		9	61		70	12	30	42		46	48		94	0	48	48			
Ridgeway Dr	2	0	273	214	489	0	10	10	285	15	16	155	471	291	22	313			
Sly Park Rd	273	214	165	98	750	174	200	374	454	46	54	209	763	398	272	670			
					Approaches to the Interchanges									Approaches to the Interchanges					
					North_NB	North_SB	South_NB	South_SB	Total_Approaches						North_NB	North_SB	South_NB	South_SB	Total_Approaches
Ray Lawer Dr	Not an interchange in the previous model				N/A	N/A	N/A	N/A	N/A										
Placerville Dr (East)					496	547			1043					166	314			480	
Mosquito Rd					378	272	693	676	2019					409	333	416	476	1634	
Carson Rd					152	121			273					39	48			87	

shows locations where TIM fee CIP project was identified

indicates where the current model is greater than the previous model

Table E-2. Interchange Volume Growth Comparison between the Previous and the Current Models – 2035 GP

Interchange	Previous Model Future PM PK									Current Model Future PM PK									
	Ramps					Overpass				Ramps					Overpass				
	EB OFF	EB ON	WB OFF	WB ON	Tot_Ramps	NB	SB	Total Ovrpas	EB OFF	EB ON	WB OFF	WB ON	Tot_Ramps	NB	SB	Total Ovrpas			
El Dorado Hills Blvd	3%	0%	0%	4%	2%	4%	3%	3%	-2%	0%	0%	-1%	-1%	2%	0%	2%			
Silva Valley Pkwy																			
Bass Lake Rd	2%	8%	7%	4%	4%	2%	8%	3%	1%	4%	3%	3%	2%	1%	5%	2%			
Cambridge Rd	3%	3%	1%	2%	2%	3%	3%	3%	-5%	0%	3%	2%	2%	2%	1%	2%			
Cameron Park Dr	3%	-1%	1%	3%	2%	3%	0%	2%	2%	1%	1%	3%	2%	4%	2%	3%			
Ponderosa Rd	1%	1%	2%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%	2%	1%			
Shingle Springs Dr	5%	3%	3%	5%	4%	5%	3%	4%	6%	3%	2%	7%	5%	5%	3%	4%			
Red Hawk Pkwy									1%	0%	0%	0%	0%	0%	0%	0%			
Greenstone Rd	3%	0%	2%	3%	2%	3%	1%	2%	0%	3%	1%	3%	2%	3%	3%	3%			
El Dorado Rd	2%	4%	1%	4%	2%	3%	2%	2%	2%	1%	2%	2%	2%	2%	3%	3%			
Missouri Flat Rd	2%	0%	0%	2%	1%	3%	2%	2%	1%	0%	0%	2%	1%	1%	0%	1%			
Placerville Dr (West)	1%	-1%	-1%	0%	0%	1%	0%	1%	1%	-1%	-100%	1%	0%	1%	-3%	0%			
Schnell School Rd	10%	-2%	1%		-1%		3%	7%	7%	0%	1%	1%	1%	0%	0%	1%			
View Point Dr	1%	2%	3%	2%	2%	1%	4%	2%	1%	1%	2%	2%	1%	2%	1%	2%			
Smith Flat Rd		-1%	7%			5%	3%	2%	2%	2%	1%		2%		1%	1%			
Ridgeway Dr				1%	1%	1%		1%	0%	0%	0%	0%	0%	0%	0%	0%			
Sly Park Rd	3%	-1%	0%	0%	1%	0%	1%	0%	1%	1%	1%	1%	1%	1%	1%	1%			
						Approaches to the Interchanges									Approaches to the Interchanges				
						North_NB	North_SB	South_NB	South_SB	Total_Approaches						North_NB	North_SB	South_NB	South_SB
Ray Lawer Dr	Not an interchange in the previous model			N/A	N/A	N/A	N/A	N/A	N/A										
Placerville Dr (East)																			
Mosquito Rd				1%	1%	1%	1%	1%							1%	2%	1%	2%	
Carson Rd				0%	0%			0%							2%	4%		3%	

shows locations where TIM fee CIP project was identified

indicates where the current model is greater than the previous model

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